



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

EPA Region 5 Records Ctr.



232871

November 3, 2004

REPLY TO THE ATTENTION OF:

SE-5J

Mr. Steven C. Kornder, Ph.D.
STS Consultants, Ltd.
750 Corporate Woods Parkway
Vernon Hills, IL 60061-3153

RE: Lindsay Light II Site-Family Golf Course/Lakeshore East, 221 North Columbus Drive, RV5
Site, Verification Samples

Dear Mr. Kornder:

The U.S. Environmental Protection Agency (USEPA) has received the site verification samples for the Lakeshore East project from the National Air and Radiation Environmental Laboratory. The data packages are enclosed.

If you have questions regarding this letter, please contact me, as soon as possible, at (312) 886-5123.

Sincerely,

Fredrick A. Micke, P.E.
On-Scene Coordinator
ERB Section #3



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF RADIATION AND INDOOR AIR
National Air and Radiation Environmental Laboratory
540 South Morris Avenue, Montgomery, AL 36115-2601
(334) 270-3400

October 7, 2004

MEMORANDUM

SUBJECT: Radiochemical Results for
Lindsay Light II-Lake Shore East Samples

FROM: John Griggs, Chief *John Griggs*
Monitoring and Analytical Services Branch

TO: Fred Micke, On-Scene Coordinator
Region 5

Attached are data packages for isotopic uranium and thorium analysis of samples collected from the Lindsay Light Site, Lake Shore East in Chicago, IL. The sample constitutes NAREL batch numbers 0400031 and 0400032.

Radiochemical analyses usually require the subtraction of an instrument background measurement from a gross sample measurement. Both values are positive, but when the sample activity is low, random variations in the two measurements can cause the gross value to be less than the background, resulting in a measured activity less than zero. Although negative activities have no physical significance, they do have statistical significance, as for example in the evaluation of trends or the comparison of two groups of samples.

For all analyses except gamma spectroscopy, it is the policy of NAREL to report results as generated, whether positive, negative, or zero, together with the 2-sigma measurement uncertainty and a sample-specific estimate of the minimum detectable concentration (MDC). The activity, uncertainty, and MDC are given in the same units. The activity and 2-sigma uncertainty for a radionuclide measured by gamma spectroscopy are reported only if the nuclide is detected; so, the results of gamma analyses are never zero or negative. Nuclides that are not detected do not appear in the report, with the exception of Ba-140, Co-60, Cs-137, I-131, K-40, Ra-226, and Ra-228. If one of these seven nuclides is undetected, NAREL reports it as "Not Detected," or "ND," and provides a sample-specific estimate of the MDC.

Specific information concerning all aspects of the radiological analysis of the samples is contained in the batch case narratives of the data packages. If you have any questions concerning the analytical results, please contact me at (334)270-3450.

Attachments

cc: Jack Barnette, Region 5, w/o attachments
 Steve Ostrodka, SF, Region 5, w/o attachments
 Mary Clark, (6601J), w/o attachments
 Ed Sensintaffar, NAREL

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES**

REPORT OF SAMPLE DELIVERY GROUP #0400031

Project: LINDSAY LIGHT II
 Analysis Procedure: Actinides (Uranium) by Extraction Chromatography
 Date Reported: 09/02/2004

SAMPLES

NAREL Sample #	Client Sample ID	Type	Matrix	Date Collected	Date Received
A4.02877K	28A	SAM	SOIL	12/23/2002	06/10/2004
A4.02878L	26CD	SAM	SOIL	12/23/2002	06/10/2004
A4.02879M	35B36A	SAM	SOIL	12/23/2002	06/10/2004
A4.02880E	E-F.5/13-19	SAM	SOIL	01/27/2003	06/10/2004
A4.02881F	I-N/13-19	SAM	SOIL	01/27/2003	06/10/2004
A4.02882G	S-9 WEST	SAM	SOIL	01/27/2003	06/10/2004
A4.02883H	S-9 EAST	SAM	SOIL	01/27/2003	06/10/2004
A4.02884J	10A	SAM	SOIL	02/05/2003	06/10/2004
A4.02885K	29C	SAM	SOIL	02/05/2003	06/10/2004
A4.02886L	11A10B WEST	SAM	SOIL	02/05/2003	06/10/2004
A4.02887M	11A10B EAST	SAM	SOIL	02/11/2003	06/10/2004
A4.02888N	7C	SAM	SOIL	03/06/2003	06/10/2004
A4.02889P	9A#1	SAM	SOIL	03/27/2003	06/10/2004
A4.02890G	9A#2	SAM	SOIL	03/27/2003	06/10/2004
A4.02891H	9B	SAM	SOIL	03/27/2003	06/10/2004
A4.02892J	36A	SAM	SOIL	03/27/2003	06/10/2004
A4.02893K	9C	SAM	SOIL	04/04/2003	06/10/2004
A4.02894L	10C	SAM	SOIL	04/04/2003	06/10/2004
A4.02895M	10D#1	SAM	SOIL	04/04/2003	06/10/2004
A4.02896N	10D#3	SAM	SOIL	04/04/2003	06/10/2004

EXCEPTIONS

1. Packaging and Shipping - No problems were observed.
2. Documentation - No problems were observed.
3. Sample Preparation - No problems were encountered.
4. Analysis - No problems were encountered.
5. Holding Times - All holding times were met.

QUALITY CONTROL

1. QC samples - All QC analysis results met NAREL acceptance criteria.
2. Yields - All chemical yields were within acceptance limits.
3. Instruments - Response and background checks for all instruments used in these analyses met NAREL acceptance criteria.

CERTIFICATION

I certify that this data report complies with the terms and conditions of the Quality Assurance Project Plan, except as noted above. Release of the data contained in this report has been authorized by the Chief of the Monitoring and Analytical Services Branch and the NAREL Quality Assurance Coordinator, or their designees, as verified by the following signatures.

Mary F. Wisdom
Quality Assurance Coordinator

Date

John Griggs, Ph.D.

Chief, Monitoring and Analytical Services Branch

Date

9/10/08

GENERAL INFORMATION

SAMPLE TYPES

BLD	Blind sample
FBK	Field blank
SAM	Normal sample

ANALYSIS QC TYPES

ANA	Normal analysis
DUP	Laboratory duplicate
LCS	Laboratory control sample (blank spike)
MS	Matrix spike
MSD	Matrix spike duplicate
RBK	Reagent blank

QUALITY INDICATORS

RPD	Relative Percent Difference
%R	Percent Recovery
Z	Number of standard deviations by which a QC measurement differs from the expected value

EVALUATION OF QC ANALYSES

A reagent blank result is considered unacceptable if it is more than 3 standard deviations below zero or more than 3 standard deviations above a predetermined upper control limit. For some analyses NAREL has set the upper control limit at zero. For others the control limit is a small positive number.

NAREL evaluates the results of duplicate and spike analyses using "Z scores." A Z score is the number of standard deviations by which the QC result differs from its ideal value. The score is considered acceptable if its absolute value is not greater than 3.

The Z score for a spiked sample is computed by dividing the difference between the measured value and the target value by the combined standard uncertainty of the difference.

The Z score for a duplicate analysis is computed by dividing the difference between the two measured values by the combined standard uncertainty of the difference. When the precision of paired MS/MSD analyses is evaluated, the native sample activity is subtracted from each measured value and the net concentrations are then converted to total activities before the Z score is computed.

Each standard uncertainty used to compute a Z score includes an additional fixed term to represent sources of measurement error other than counting error. This additional term is not used in the evaluation of reagent blanks.

NAREL reports the "relative percent difference," or RPD, between duplicate results and the "percent recovery," or %R, for spiked analyses, but does not use these values for evaluation.

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES
SDG #0400031

ANALYSIS SUMMARY

Analysis Procedure: NAREL U-EICHROM
 Title: Actinides (Uranium) by Extraction Chromatography

NAREL Sample #	QC Type	Preparation Procedure	Date Completed	Prep Batch #	QC Batch #
A4.02877K		N/A	08/24/2004	0008896M	0003352B
A4.02877K	MS	N/A	08/24/2004	0008896M	0003352B
A4.02877K	MSD	N/A	08/24/2004	0008896M	0003352B
A4.02878L		N/A	08/24/2004	0008896M	0003352B
A4.02879M		N/A	08/24/2004	0008896M	0003352B
A4.02880E		N/A	08/24/2004	0008896M	0003352B
A4.02880E	DUP	N/A	08/24/2004	0008896M	0003352B
A4.02881F		N/A	08/26/2004	0008898P	0003352B
A4.02882G		N/A	08/26/2004	0008898P	0003352B
A4.02883H		N/A	08/26/2004	0008898P	0003352B
A4.02884J		N/A	08/26/2004	0008898P	0003352B
A4.02885K		N/A	08/26/2004	0008898P	0003352B
A4.02886L		N/A	08/26/2004	0008898P	0003352B
A4.02887M		N/A	08/26/2004	0008898P	0003352B
A4.02888N		N/A	08/26/2004	0008898P	0003352B
A4.02889P		N/A	08/31/2004	0008919B	0003352B
A4.02890G		N/A	08/31/2004	0008919B	0003352B
A4.02891H		N/A	08/31/2004	0008919B	0003352B
A4.02892J		N/A	08/31/2004	0008919B	0003352B
A4.02893K		N/A	08/31/2004	0008919B	0003352B
A4.02894L		N/A	08/31/2004	0008919B	0003352B
A4.02895M		N/A	08/31/2004	0008919B	0003352B
A4.02896N		N/A	08/31/2004	0008919B	0003352B
RBK-00476856J *	RBK	N/A	08/24/2004	0008896M	0003352B

* Samples marked with an asterisk are not in this sample delivery group but were analyzed with it for QC purposes.

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U ANALYSES
SDG #0400031

SAMPLE ANALYSIS REPORT

Sample #:	A4.02877K	QC batch #:	0003352B
Matrix:	SOIL	Prep batch #:	0008896M
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.678e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	98.35 %	Analyst:	PMT
Ash/dry weight:	92.00 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/23/2004 18:26	1000.0	AS01	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
U234	3.94e-01	1.2e-01	5.9e-02	PCI/GDRY	08/23/2004
U235	-2.81e-03	1.9e-02	4.4e-02	PCI/GDRY	08/23/2004
U238	4.65e-01	1.3e-01	4.8e-02	PCI/GDRY	08/23/2004

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NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES
SDG #0400031**

SAMPLE ANALYSIS REPORT

Sample #:	A4.02877K	QC batch #:	0003352B
Matrix:	SOIL	Prep batch #:	0008896M
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.512e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	98.35 %	Analyst:	PMT
Ash/dry weight:	92.00 %	QC type:	MS

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/23/2004 18:27	1000.0	AS03	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
U234	7.90e+00	1.1e+00	6.1e-02	PCI/GDRY	08/23/2004
U235	5.36e-01	1.8e-01	3.6e-02	PCI/GDRY	08/23/2004
U238	8.58e+00	1.2e+00	6.1e-02	PCI/GDRY	08/23/2004

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U ANALYSES
SDG #0400031

SAMPLE ANALYSIS REPORT

Sample #:	A4.02877K	QC batch #:	0003352B
Matrix:	SOIL	Prep batch #:	0008896M
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.533e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	98.35 %	Analyst:	PMT
Ash/dry weight:	92.00 %	QC type:	MSD

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/23/2004 18:27	1000.0	AS04	DPG

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2\sigma$ Uncertainty	MDC	Unit	Date
U234	7.74e+00	1.1e+00	5.8e-02	PCI/GDRY	08/23/2004
U235	3.61e-01	1.3e-01	7.8e-02	PCI/GDRY	08/23/2004
U238	8.19e+00	1.1e+00	5.3e-02	PCI/GDRY	08/23/2004

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U ANALYSES
SDG #0400031

SAMPLE ANALYSIS REPORT

Sample #:	A4.02878L	QC batch #:	0003352B
Matrix:	SOIL	Prep batch #:	0008896M
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.564e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	98.52 %	Analyst:	PMT
Ash/dry weight:	80.00 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/23/2004 18:27	1000.0	AS06	DPG

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2\sigma$ Uncertainty	MDC	Unit	Date
U234	1.18e+00	2.4e-01	2.4e-02	PCI/GDRY	08/23/2004
U235	4.37e-02	4.7e-02	4.9e-02	PCI/GDRY	08/23/2004
U238	1.03e+00	2.2e-01	4.8e-02	PCI/GDRY	08/23/2004

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U ANALYSES
SDG #0400031

SAMPLE ANALYSIS REPORT

Sample #:	A4.02879M	QC batch #:	0003352B
Matrix:	SOIL	Prep batch #:	0008896M
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.546e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	85.40 %	Analyst:	PMT
Ash/dry weight:	77.60 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/23/2004 18:27	1000.0	AS07	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
U234	2.94e+00	4.6e-01	5.8e-02	PCI/GDRY	08/23/2004
U235	1.42e-01	7.5e-02	5.0e-02	PCI/GDRY	08/23/2004
U238	2.85e+00	4.5e-01	6.3e-02	PCI/GDRY	08/23/2004

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NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES
SDG #0400031

SAMPLE ANALYSIS REPORT

Sample #:	A4.02880E	QC batch #:	0003352B
Matrix:	SOIL	Prep batch #:	0008896M
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.546e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	94.02 %	Analyst:	PMT
Ash/dry weight:	88.00 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/23/2004 18:26	1000.0	AS09	DPG

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2\sigma$ Uncertainty	MDC	Unit	Date
U234	7.73e-01	2.0e-01	5.3e-02	PCI/GDRY	08/23/2004
U235	5.64e-02	6.1e-02	6.3e-02	PCI/GDRY	08/23/2004
U238	7.90e-01	2.1e-01	6.2e-02	PCI/GDRY	08/23/2004

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U ANALYSES
SDG #0400031

SAMPLE ANALYSIS REPORT

Sample #:	A4.02880E	QC batch #:	0003352B
Matrix:	SOIL	Prep batch #:	0008896M
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.542e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	94.02 %	Analyst:	PMT
Ash/dry weight:	88.00 %	QC type:	DUP

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/23/2004 18:26	1000.0	AS10	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
U234	7.36e-01	1.8e-01	4.9e-02	PCI/GDRY	08/23/2004
U235	3.86e-02	4.4e-02	2.9e-02	PCI/GDRY	08/23/2004
U238	8.30e-01	1.9e-01	5.5e-02	PCI/GDRY	08/23/2004

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U ANALYSES
SDG #0400031

SAMPLE ANALYSIS REPORT

Sample #:	A4.02881F	QC batch #:	0003352B
Matrix:	SOIL	Prep batch #:	0008898P
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.503e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	82.47 %	Analyst:	PMT
Ash/dry weight:	82.00 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/25/2004 18:12	1000.0	AS01	DPG

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2\sigma$ Uncertainty	MDC	Unit	Date
U234	1.97e+00	3.4e-01	6.1e-02	PCI/GDRY	08/25/2004
U235	6.63e-02	5.3e-02	4.5e-02	PCI/GDRY	08/25/2004
U238	1.86e+00	3.2e-01	4.9e-02	PCI/GDRY	08/25/2004

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U ANALYSES
SDG #0400031

SAMPLE ANALYSIS REPORT

Sample #:	A4.02882G	QC batch #:	0003352B
Matrix:	SOIL	Prep batch #:	0008898P
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.520e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	94.04 %	Analyst:	PMT
Ash/dry weight:	86.80 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/25/2004 18:12	1000.0	AS03	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
U234	1.36e+00	2.7e-01	5.2e-02	PCI/GDRY	08/25/2004
U235	4.05e-02	4.6e-02	3.1e-02	PCI/GDRY	08/25/2004
U238	1.27e+00	2.6e-01	5.2e-02	PCI/GDRY	08/25/2004

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U ANALYSES
SDG #0400031

SAMPLE ANALYSIS REPORT

Sample #:	A4.02883H	QC batch #:	0003352B
Matrix:	SOIL	Prep batch #:	0008898P
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.508e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	87.60 %	Analyst:	PMT
Ash/dry weight:	79.20 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/25/2004 18:12	1000.0	AS04	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
U234	1.96e+00	3.6e-01	6.8e-02	PCI/GDRY	08/25/2004
U235	4.35e-02	6.1e-02	9.2e-02	PCI/GDRY	08/25/2004
U238	1.97e+00	3.7e-01	6.2e-02	PCI/GDRY	08/25/2004

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U ANALYSES
SDG #0400031

SAMPLE ANALYSIS REPORT

Sample #:	A4.02884J	QC batch #:	0003352B
Matrix:	SOIL	Prep batch #:	0008898P
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.511e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	90.40 %	Analyst:	PMT
Ash/dry weight:	88.80 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/25/2004 18:12	1000.0	AS06	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
U234	1.06e+00	2.3e-01	2.7e-02	PCI/GDRY	08/25/2004
U235	1.13e-01	7.6e-02	5.6e-02	PCI/GDRY	08/25/2004
U238	1.04e+00	2.3e-01	5.5e-02	PCI/GDRY	08/25/2004

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NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES
SDG #0400031**

SAMPLE ANALYSIS REPORT

Sample #:	A4.02885K	QC batch #:	0003352B
Matrix:	SOIL	Prep batch #:	0008898P
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.510e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	84.70 %	Analyst:	PMT
Ash/dry weight:	86.40 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/25/2004 18:12	1000.0	AS07	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
U234	1.48e+00	2.9e-01	7.4e-02	PCI/GDRY	08/25/2004
U235	8.75e-02	6.9e-02	6.4e-02	PCI/GDRY	08/25/2004
U238	1.69e+00	3.2e-01	8.1e-02	PCI/GDRY	08/25/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES
SDG #0400031

SAMPLE ANALYSIS REPORT

Sample #:	A4.02886L	QC batch #:	0003352B
Matrix:	SOIL	Prep batch #:	0008898P
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.512e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	92.36 %	Analyst:	PMT
Ash/dry weight:	89.20 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/25/2004 18:12	1000.0	AS09	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
U234	8.42e-01	2.3e-01	6.0e-02	PCI/GDRY	08/25/2004
U235	6.39e-02	6.9e-02	7.2e-02	PCI/GDRY	08/25/2004
U238	8.72e-01	2.3e-01	7.0e-02	PCI/GDRY	08/25/2004

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES
SDG #0400031**

SAMPLE ANALYSIS REPORT

Sample #:	A4.02887M	QC batch #:	0003352B
Matrix:	SOIL	Prep batch #:	0008898P
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.595e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	92.86 %	Analyst:	PMT
Ash/dry weight:	88.40 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/25/2004 18:12	1000.0	AS10	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
U234	8.22e-01	2.0e-01	5.4e-02	PCI/GDRY	08/25/2004
U235	7.31e-02	6.0e-02	3.2e-02	PCI/GDRY	08/25/2004
U238	8.02e-01	2.0e-01	6.0e-02	PCI/GDRY	08/25/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES
SDG #0400031

SAMPLE ANALYSIS REPORT

Sample #:	A4.02888N	QC batch #:	0003352B
Matrix:	SOIL	Prep batch #:	0008898P
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.537e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	93.24 %	Analyst:	PMT
Ash/dry weight:	90.00 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/25/2004 18:12	1000.0	AS12	DPG

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2\sigma$ Uncertainty	MDC	Unit	Date
U234	7.93e-01	1.9e-01	4.3e-02	PCI/GDRY	08/25/2004
U235	3.60e-02	4.5e-02	5.1e-02	PCI/GDRY	08/25/2004
U238	7.98e-01	1.9e-01	5.0e-02	PCI/GDRY	08/25/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES
SDG #0400031

SAMPLE ANALYSIS REPORT

Sample #:	A4.02889P	QC batch #:	0003352B
Matrix:	SOIL	Prep batch #:	0008919B
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.515e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	88.96 %	Analyst:	PMT
Ash/dry weight:	78.40 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/30/2004 18:36	1000.0	AS01	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
U234	1.12e+00	2.2e-01	5.7e-02	PCI/GDRY	08/30/2004
U235	3.78e-02	4.1e-02	4.2e-02	PCI/GDRY	08/30/2004
U238	9.34e-01	2.0e-01	4.6e-02	PCI/GDRY	08/30/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES
SDG #0400031

SAMPLE ANALYSIS REPORT

Sample #:	A4.02890G	QC batch #:	0003352B
Matrix:	SOIL	Prep batch #:	0008919B
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.529e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	94.92 %	Analyst:	PMT
Ash/dry weight:	80.00 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/30/2004 18:36	1000.0	AS02	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
U234	9.80e-01	2.0e-01	2.0e-02	PCI/GDRY	08/30/2004
U235	5.66e-02	4.7e-02	2.4e-02	PCI/GDRY	08/30/2004
U238	1.12e+00	2.2e-01	4.2e-02	PCI/GDRY	08/30/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES
SDG #0400031

SAMPLE ANALYSIS REPORT

Sample #:	A4.02891H	QC batch #:	0003352B
Matrix:	SOIL	Prep batch #:	0008919B
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.536e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	89.80 %	Analyst:	PMT
Ash/dry weight:	87.60 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/30/2004 18:36	1000.0	AS03	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
U234	1.54e+00	2.9e-01	4.9e-02	PCI/GDRY	08/30/2004
U235	9.46e-02	6.4e-02	2.9e-02	PCI/GDRY	08/30/2004
U238	1.50e+00	2.9e-01	4.9e-02	PCI/GDRY	08/30/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES
SDG #0400031

SAMPLE ANALYSIS REPORT

Sample #:	A4.02892J	QC batch #:	0003352B
Matrix:	SOIL	Prep batch #:	0008919B
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.539e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	98.99 %	Analyst:	PMT
Ash/dry weight:	93.20 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/30/2004 18:36	1000.0	AS04	DPG

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2\sigma$ Uncertainty	MDC	Unit	Date
U234	3.83e-01	1.5e-01	8.7e-02	PCI/GDRY	08/30/2004
U235	0.00e+00	5.5e-02	1.2e-01	PCI/GDRY	08/30/2004
U238	4.10e-01	1.5e-01	8.0e-02	PCI/GDRY	08/30/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES
SDG #0400031

SAMPLE ANALYSIS REPORT

Sample #:	A4.02893K	QC batch #:	0003352B
Matrix:	SOIL	Prep batch #:	0008919B
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.506e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	89.63 %	Analyst:	PMT
Ash/dry weight:	86.40 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/30/2004 18:36	1000.0	AS07	DPG

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2\sigma$ Uncertainty	MDC	Unit	Date
U234	9.11e-01	2.0e-01	6.5e-02	PCI/GDRY	08/30/2004
U235	6.73e-02	5.7e-02	5.6e-02	PCI/GDRY	08/30/2004
U238	8.60e-01	2.0e-01	7.1e-02	PCI/GDRY	08/30/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES
SDG #0400031

SAMPLE ANALYSIS REPORT

Sample #:	A4.02894L	QC batch #:	0003352B
Matrix:	SOIL	Prep batch #:	0008919B
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.532e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	89.95 %	Analyst:	PMT
Ash/dry weight:	89.20 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/30/2004 18:36	1000.0	AS09	DPG

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2\sigma$ Uncertainty	MDC	Unit	Date
U234	8.76e-01	2.4e-01	6.5e-02	PCI/GDRY	08/30/2004
U235	9.90e-02	8.6e-02	7.8e-02	PCI/GDRY	08/30/2004
U238	1.07e+00	2.7e-01	7.6e-02	PCI/GDRY	08/30/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES
SDG #0400031

SAMPLE ANALYSIS REPORT

Sample #:	A4.02895M	QC batch #:	0003352B
Matrix:	SOIL	Prep batch #:	0008919B
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.524e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	91.98 %	Analyst:	PMT
Ash/dry weight:	85.60 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/30/2004 18:36	1000.0	AS10	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
U234	7.40e-01	1.9e-01	5.5e-02	PCI/GDRY	08/30/2004
U235	4.30e-02	4.9e-02	3.2e-02	PCI/GDRY	08/30/2004
U238	9.25e-01	2.2e-01	6.1e-02	PCI/GDRY	08/30/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES
SDG #0400031

SAMPLE ANALYSIS REPORT

Sample #:	A4.02896N	QC batch #:	0003352B
Matrix:	SOIL	Prep batch #:	0008919B
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.552e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	94.83 %	Analyst:	PMT
Ash/dry weight:	87.60 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/30/2004 18:36	1000.0	AS12	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
U234	8.58e-01	1.9e-01	3.7e-02	PCI/GDRY	08/30/2004
U235	9.01e-02	6.0e-02	4.4e-02	PCI/GDRY	08/30/2004
U238	8.63e-01	1.9e-01	4.3e-02	PCI/GDRY	08/30/2004

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES
SDG #0400031**

SAMPLE ANALYSIS REPORT

QC Sample #: RBK-00476856J

QC batch #: 0003352B
Prep batch #: 0008896M
Prep procedure: N/A
Analysis procedure: NAREL U-EICHROM
Analyst: PMT
QC type: RBK

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/23/2004 18:26	1000.0	AS12	DPG

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2\sigma$ Uncertainty	MDC	Unit	Date
U234	1.80e-02	1.3e-02	9.7e-03	PCI	08/23/2004
U235	1.48e-03	6.6e-03	1.2e-02	PCI	08/23/2004
U238	1.73e-02	1.3e-02	1.1e-02	PCI	08/23/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES
SDG #0400031

QC BATCH SUMMARY

QC batch #: 0003352B
 Preparation procedure: N/A
 Analysis procedure: NAREL U-EICHROM

NAREL Sample #	QC Type	Yield (%)	± 2σ Uncertainty (%)	Analyst
A4.02877K		87.74 %	6.31 %	PMT
A4.02877K	MS	75.35 %	5.89 %	PMT
A4.02877K	MSD	96.28 %	7.05 %	PMT
A4.02878L		82.43 %	6.30 %	PMT
A4.02879M		91.27 %	6.78 %	PMT
A4.02880E		86.98 %	6.99 %	PMT
A4.02880E	DUP	90.68 %	6.78 %	PMT
A4.02881F		81.59 %	5.98 %	PMT
A4.02882G		83.25 %	6.33 %	PMT
A4.02883H		71.30 %	5.67 %	PMT
A4.02884J		82.30 %	6.29 %	PMT
A4.02885K		80.43 %	6.18 %	PMT
A4.02886L		78.84 %	6.52 %	PMT
A4.02887M		82.47 %	6.33 %	PMT
A4.02888N		78.59 %	5.83 %	PMT
A4.02889P		82.83 %	6.05 %	PMT
A4.02890G		94.87 %	6.93 %	PMT
A4.02891H		89.38 %	6.67 %	PMT
A4.02892J		64.22 %	5.27 %	PMT
A4.02893K		92.19 %	6.83 %	PMT
A4.02894L		72.13 %	6.13 %	PMT
A4.02895M		79.65 %	6.17 %	PMT
A4.02896N		88.46 %	6.37 %	PMT
RBK-00476856J *	RBK	97.78 %	6.87 %	PMT

* Samples marked with an asterisk are not in this sample delivery group but were analyzed with it for QC purposes.

National Air and Radiation Environmental Laboratory
QC Batch Report

QC Batch #: 0003352B

Analytical Procedure: NAREL U-EICHROM

REAGENT BLANKS (PCI)

Sample ID	Nuclide	Activity $\pm 2\sigma$	Prep Date
00476856J	U234	1.80e-02 \pm 1.3e-02	2004-08-17
00476856J	U235	1.48e-03 \pm 6.6e-03	2004-08-17
00476856J	U238	1.73e-02 \pm 1.3e-02	2004-08-17

LABORATORY DUPLICATES (PCI/GASH)

Sample ID	Nuclide	Original $\pm 2\sigma$	Duplicate $\pm 2\sigma$	RPD	Z
A4.02880E	U234	8.79e-01 \pm 2.3e-01	8.36e-01 \pm 2.0e-01	4.97	-0.27 OK
A4.02880E	U235	6.40e-02 \pm 6.9e-02	4.38e-02 \pm 5.0e-02	37.44	-0.47 OK
A4.02880E	U238	8.98e-01 \pm 2.3e-01	9.43e-01 \pm 2.2e-01	4.90	0.27 OK

MATRIX SPIKES (PCI/GASH)

Sample ID	Nuclide	Amt Added $\pm 2\sigma$	Native $\pm 2\sigma$	Measured $\pm 2\sigma$	%R	Z
A4.02877K	U234	8.18e+00 \pm 2.2%	4.29e-01 \pm 1.3e-01	8.59e+00 \pm 1.2e+00	99.84	-0.02 OK
A4.02877K	U235	3.91e-01 \pm 2.1%	-3.05e-03 \pm 2.0e-02	5.82e-01 \pm 1.9e-01	149.78	1.98 OK
A4.02877K	U238	8.49e+00 \pm 2.1%	5.05e-01 \pm 1.4e-01	9.33e+00 \pm 1.3e+00	103.92	0.47 OK

MATRIX SPIKE DUPLICATES (PCI/GASH)

Sample ID	Nuclide	Amt Added $\pm 2\sigma$	Measured $\pm 2\sigma$	RPD	Z	%R	Z
A4.02877K	U234	8.11e+00 \pm 2.2%	8.41e+00 \pm 1.2e+00	1.38	0.12 OK	98.48	-0.20 OK
A4.02877K	U235	3.87e-01 \pm 2.1%	3.93e-01 \pm 1.4e-01	37.83	1.53 OK	102.13	0.11 OK
A4.02877K	U238	8.42e+00 \pm 2.1%	8.90e+00 \pm 1.2e+00	4.08	0.37 OK	99.77	-0.03 OK

Analyst:

Paula M. Thaxton
 Thaxton, Paula M.

9/1/04

QA Officer:

Linda J. McIver

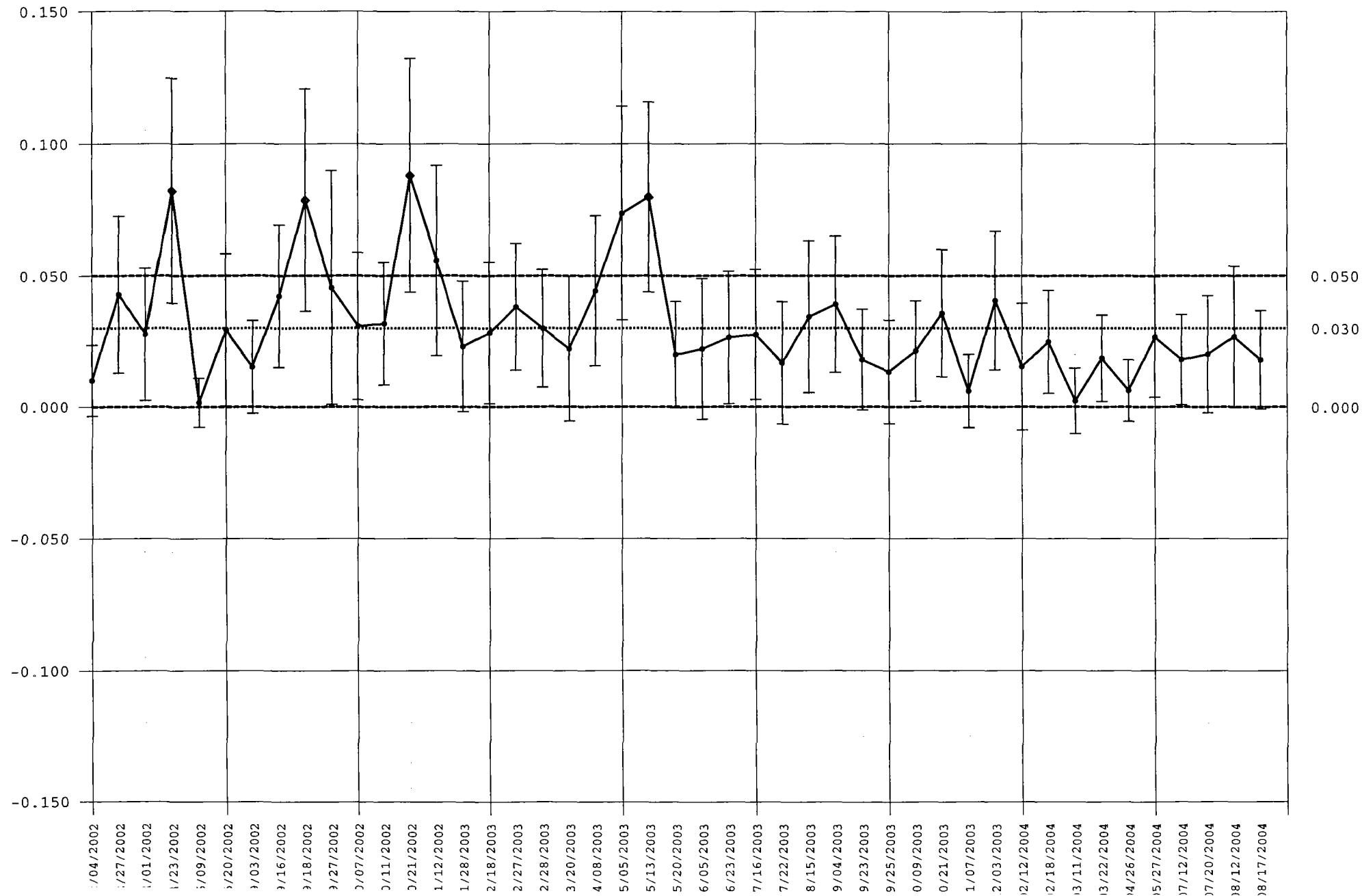
9/1/04

Reagent Blanks

Analyte: U234

Procedure: NAREL U-EICHROM

Analyst: Thaxton, Paula M.

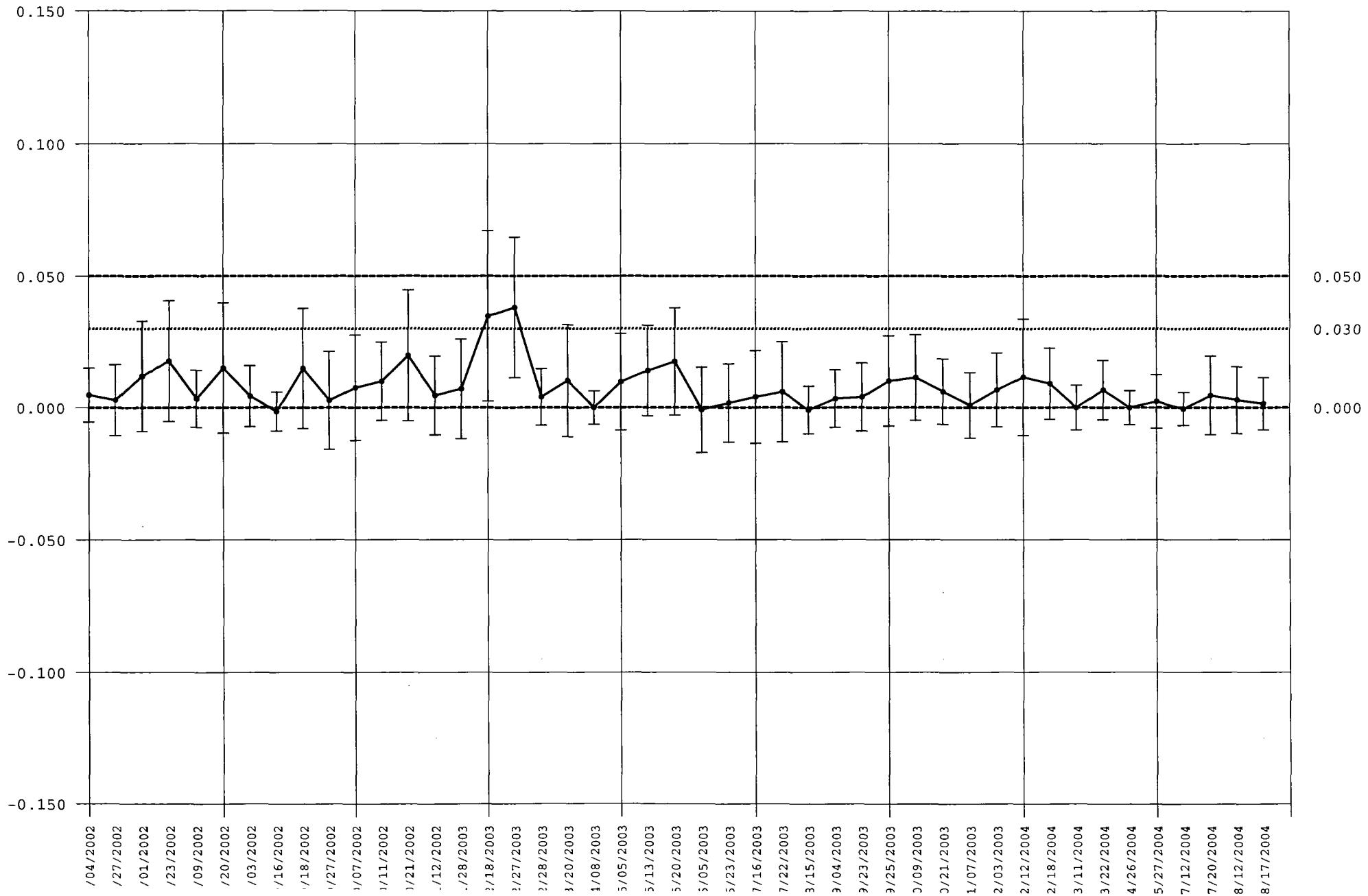


Reagent Blanks

Analyte: U235

Procedure: NAREL U-EICHROM

Analyst: Thaxton, Paula M.

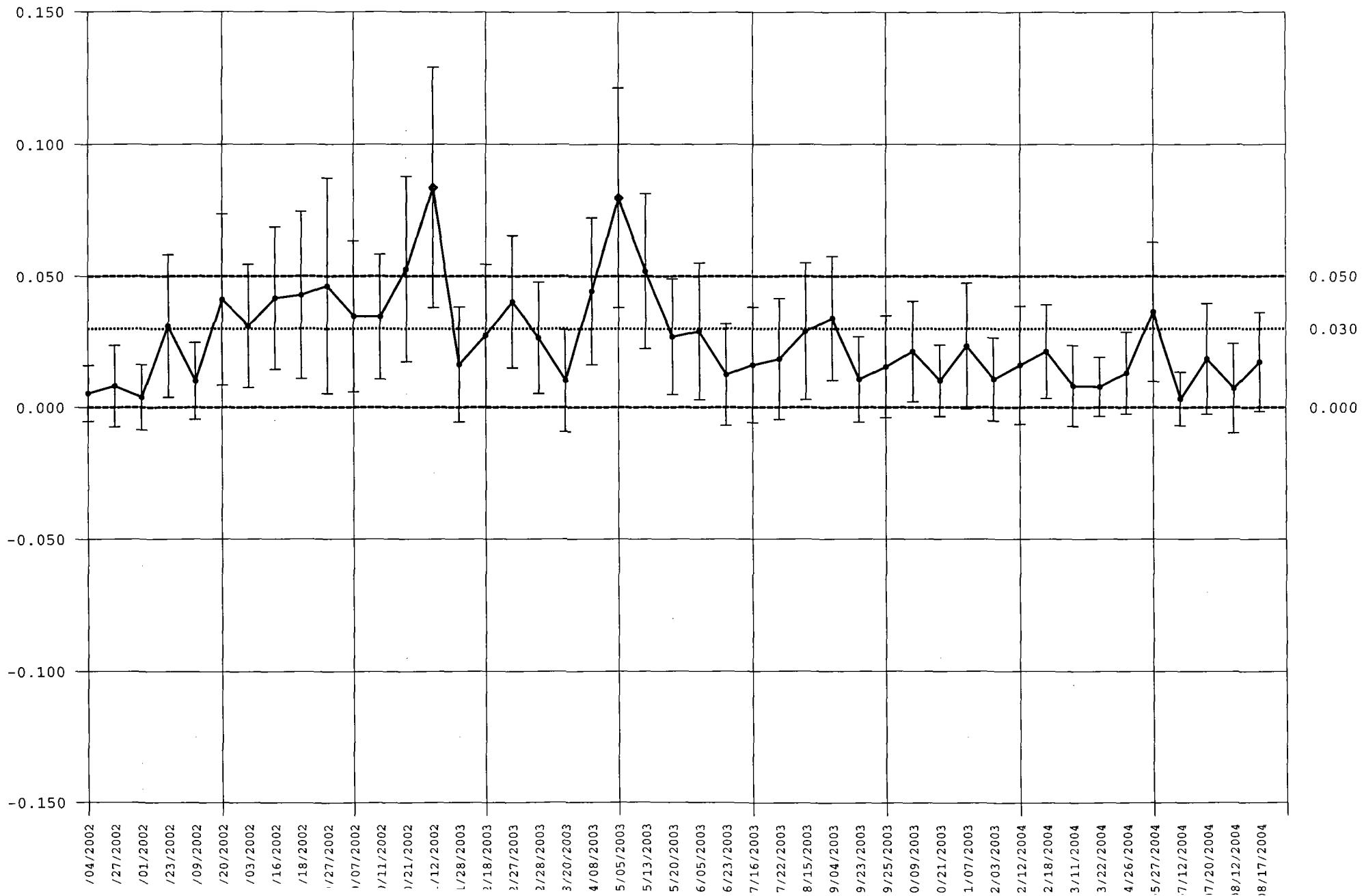


Reagent Blanks

Analyte: U238

Procedure: NAREL U-EICHROM

Analyst: Thaxton, Paula M.



**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES**

REPORT OF SAMPLE DELIVERY GROUP #0400031

Project: LINDSAY LIGHT II
 Analysis Procedure: Actinides (Thorium) by Extraction Chromatography
 Date Reported: 09/03/2004

SAMPLES

NAREL Sample #	Client Sample ID	Type	Matrix	Date Collected	Date Received
A4.02877K	28A	SAM	SOIL	12/23/2002	06/10/2004
A4.02878L	26CD	SAM	SOIL	12/23/2002	06/10/2004
A4.02879M	35B36A	SAM	SOIL	12/23/2002	06/10/2004
A4.02880E	E-F.5/13-19	SAM	SOIL	01/27/2003	06/10/2004
A4.02881F	I-N/13-19	SAM	SOIL	01/27/2003	06/10/2004
A4.02882G	S-9 WEST	SAM	SOIL	01/27/2003	06/10/2004
A4.02883H	S-9 EAST	SAM	SOIL	01/27/2003	06/10/2004
A4.02884J	10A	SAM	SOIL	02/05/2003	06/10/2004
A4.02885K	29C	SAM	SOIL	02/05/2003	06/10/2004
A4.02886L	11A10B WEST	SAM	SOIL	02/05/2003	06/10/2004
A4.02887M	11A10B EAST	SAM	SOIL	02/11/2003	06/10/2004
A4.02888N	7C	SAM	SOIL	03/06/2003	06/10/2004
A4.02889P	9A#1	SAM	SOIL	03/27/2003	06/10/2004
A4.02890G	9A#2	SAM	SOIL	03/27/2003	06/10/2004
A4.02891H	9B	SAM	SOIL	03/27/2003	06/10/2004
A4.02892J	36A	SAM	SOIL	03/27/2003	06/10/2004
A4.02893K	9C	SAM	SOIL	04/04/2003	06/10/2004
A4.02894L	10C	SAM	SOIL	04/04/2003	06/10/2004
A4.02895M	10D#1	SAM	SOIL	04/04/2003	06/10/2004
A4.02896N	10D#3	SAM	SOIL	04/04/2003	06/10/2004

EXCEPTIONS

1. Packaging and Shipping - No problems were observed.
2. Documentation - No problems were observed.
3. Sample Preparation - No problems were encountered.
4. Analysis - No problems were encountered.
5. Holding Times - All holding times were met.

QUALITY CONTROL

1. QC samples - All QC analysis results met NAREL acceptance criteria.
2. Yields - All chemical yields were within acceptance limits.
3. Instruments - Response and background checks for all instruments used in these analyses met NAREL acceptance criteria.

CERTIFICATION

I certify that this data report complies with the terms and conditions of the Quality Assurance Project Plan, except as noted above. Release of the data contained in this report has been authorized by the Chief of the Monitoring and Analytical Services Branch and the NAREL Quality Assurance Coordinator, or their designees, as verified by the following signatures.

Mary Wisdom 10/7/04
Mary F. Wisdom
Quality Assurance Coordinator

John Griggs 10/7/04
John Griggs, Ph.D.
Chief, Monitoring and Analytical Services Branch

GENERAL INFORMATION

SAMPLE TYPES

BLD	Blind sample
FBK	Field blank
SAM	Normal sample

ANALYSIS QC TYPES

ANA	Normal analysis
DUP	Laboratory duplicate
LCS	Laboratory control sample (blank spike)
MS	Matrix spike
MSD	Matrix spike duplicate
RBK	Reagent blank

QUALITY INDICATORS

RPD	Relative Percent Difference
%R	Percent Recovery
Z	Number of standard deviations by which a QC measurement differs from the expected value

EVALUATION OF QC ANALYSES

A reagent blank result is considered unacceptable if it is more than 3 standard deviations below zero or more than 3 standard deviations above a predetermined upper control limit. For some analyses NAREL has set the upper control limit at zero. For others the control limit is a small positive number.

NAREL evaluates the results of duplicate and spike analyses using "Z scores." A Z score is the number of standard deviations by which the QC result differs from its ideal value. The score is considered acceptable if its absolute value is not greater than 3.

The Z score for a spiked sample is computed by dividing the difference between the measured value and the target value by the combined standard uncertainty of the difference.

The Z score for a duplicate analysis is computed by dividing the difference between the two measured values by the combined standard uncertainty of the difference. When the precision of paired MS/MSD analyses is evaluated, the native sample activity is subtracted from each measured value and the net concentrations are then converted to total activities before the Z score is computed.

Each standard uncertainty used to compute a Z score includes an additional fixed term to represent sources of measurement error other than counting error. This additional term is not used in the evaluation of reagent blanks.

NAREL reports the "relative percent difference," or RPD, between duplicate results and the "percent recovery," or %R, for spiked analyses, but does not use these values for evaluation.

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400031

ANALYSIS SUMMARY

Analysis Procedure: NAREL TH-EICHROM
 Title: Actinides (Thorium) by Extraction Chromatography

NAREL Sample #	QC Type	Preparation Procedure	Date Completed	Prep Batch #	QC Batch #
A4.02877K		N/A	08/24/2004	0008895L	0003351A
A4.02877K	MS	N/A	08/24/2004	0008895L	0003351A
A4.02877K	MSD	N/A	08/24/2004	0008895L	0003351A
A4.02878L		N/A	08/24/2004	0008895L	0003351A
A4.02879M		N/A	08/24/2004	0008895L	0003351A
A4.02880E		N/A	08/24/2004	0008895L	0003351A
A4.02880E	DUP	N/A	08/25/2004	0008895L	0003351A
A4.02881F		N/A	08/26/2004	0008897N	0003351A
A4.02882G		N/A	08/26/2004	0008897N	0003351A
A4.02883H		N/A	08/26/2004	0008897N	0003351A
A4.02884J		N/A	08/26/2004	0008897N	0003351A
A4.02885K		N/A	08/26/2004	0008897N	0003351A
A4.02886L		N/A	08/26/2004	0008897N	0003351A
A4.02887M		N/A	08/27/2004	0008897N	0003351A
A4.02888N		N/A	08/27/2004	0008897N	0003351A
A4.02889P		N/A	08/31/2004	0008918A	0003351A
A4.02890G		N/A	08/31/2004	0008918A	0003351A
A4.02891H		N/A	08/31/2004	0008918A	0003351A
A4.02892J		N/A	08/31/2004	0008918A	0003351A
A4.02893K		N/A	08/31/2004	0008918A	0003351A
A4.02894L		N/A	08/31/2004	0008918A	0003351A
A4.02895M		N/A	09/01/2004	0008918A	0003351A
A4.02896N		N/A	09/01/2004	0008918A	0003351A
RBK-00476852E *	RBK	N/A	08/25/2004	0008895L	0003351A

* Samples marked with an asterisk are not in this sample delivery group but were analyzed with it for QC purposes.

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400031**

SAMPLE ANALYSIS REPORT

Sample #:	A4.02877K	QC batch #:	0003351A
Matrix:	SOIL	Prep batch #:	0008895L
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.678e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	98.35 %	Analyst:	PMT
Ash/dry weight:	92.00 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/23/2004 18:26	1000.0	AS33	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
Th227	2.32e-02	4.1e-02	6.1e-02	PCI/GDRY	08/23/2004
Th228	3.12e-01	9.5e-02	6.3e-02	PCI/GDRY	08/23/2004
Th230	2.64e-01	8.3e-02	2.9e-02	PCI/GDRY	08/23/2004
Th232	2.01e-01	7.2e-02	3.4e-02	PCI/GDRY	08/23/2004

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400031**

SAMPLE ANALYSIS REPORT

Sample #:	A4.02877K	QC batch #:	0003351A
Matrix:	SOIL	Prep batch #:	0008895L
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.512e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	98.35 %	Analyst:	PMT
Ash/dry weight:	92.00 %	QC type:	MS

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/23/2004 18:25	1000.0	AS34	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
Th227	-3.92e-03	3.8e-02	8.7e-02	PCI/GDRY	08/23/2004
Th228	2.23e-01	8.8e-02	7.6e-02	PCI/GDRY	08/23/2004
Th230	2.46e+01	2.8e+00	4.5e-02	PCI/GDRY	08/23/2004
Th232	2.06e-01	7.9e-02	4.0e-02	PCI/GDRY	08/23/2004

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400031**

SAMPLE ANALYSIS REPORT

Sample #:	A4.02877K	QC batch #:	0003351A
Matrix:	SOIL	Prep batch #:	0008895L
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.533e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	98.35 %	Analyst:	PMT
Ash/dry weight:	92.00 %	QC type:	MSD

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/23/2004 18:25	1000.0	AS35	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
Th227	2.36e-02	4.2e-02	6.2e-02	PCI/GDRY	08/23/2004
Th228	2.34e-01	8.2e-02	5.8e-02	PCI/GDRY	08/23/2004
Th230	2.22e+01	2.5e+00	3.9e-02	PCI/GDRY	08/23/2004
Th232	1.49e-01	6.2e-02	3.5e-02	PCI/GDRY	08/23/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400031

SAMPLE ANALYSIS REPORT

Sample #:	A4.02878L	QC batch #:	0003351A
Matrix:	SOIL	Prep batch #:	0008895L
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.564e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	98.52 %	Analyst:	PMT
Ash/dry weight:	80.00 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/23/2004 18:25	1000.0	AS38	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
Th227	2.07e-02	4.7e-02	8.2e-02	PCI/GDRY	08/23/2004
Th228	5.31e-01	1.2e-01	5.6e-02	PCI/GDRY	08/23/2004
Th230	8.72e-01	1.6e-01	3.4e-02	PCI/GDRY	08/23/2004
Th232	3.69e-01	9.6e-02	3.7e-02	PCI/GDRY	08/23/2004

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400031**

SAMPLE ANALYSIS REPORT

Sample #:	A4.02879M	QC batch #:	0003351A
Matrix:	SOIL	Prep batch #:	0008895L
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.546e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	85.40 %	Analyst:	PMT
Ash/dry weight:	77.60 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/23/2004 18:25	1000.0	AS39	DPG

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2\sigma$ Uncertainty	MDC	Unit	Date
Th227	1.86e-01	8.8e-02	5.3e-02	PCI/GDRY	08/23/2004
Th228	1.43e+00	2.3e-01	5.0e-02	PCI/GDRY	08/23/2004
Th230	2.20e+00	3.2e-01	1.5e-02	PCI/GDRY	08/23/2004
Th232	1.12e+00	1.9e-01	1.5e-02	PCI/GDRY	08/23/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400031

SAMPLE ANALYSIS REPORT

Sample #:	A4.02880E	QC batch #:	0003351A
Matrix:	SOIL	Prep batch #:	0008895L
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.546e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	94.02 %	Analyst:	PMT
Ash/dry weight:	88.00 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/23/2004 18:25	1000.0	AS40	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
Th227	4.49e-02	4.8e-02	5.0e-02	PCI/GDRY	08/23/2004
Th228	6.91e-01	1.5e-01	5.9e-02	PCI/GDRY	08/23/2004
Th230	8.10e-01	1.6e-01	2.8e-02	PCI/GDRY	08/23/2004
Th232	6.77e-01	1.4e-01	1.6e-02	PCI/GDRY	08/23/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400031

SAMPLE ANALYSIS REPORT

Sample #:	A4.02880E	QC batch #:	0003351A
Matrix:	SOIL	Prep batch #:	0008895L
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.542e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	94.02 %	Analyst:	PMT
Ash/dry weight:	88.00 %	QC type:	DUP

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/24/2004 17:42	1000.0	AS33	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
Th227	6.10e-02	6.3e-02	7.0e-02	PCI/GDRY	08/23/2004
Th228	7.67e-01	1.6e-01	7.0e-02	PCI/GDRY	08/23/2004
Th230	6.82e-01	1.5e-01	3.2e-02	PCI/GDRY	08/23/2004
Th232	6.91e-01	1.5e-01	3.8e-02	PCI/GDRY	08/23/2004

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400031**

SAMPLE ANALYSIS REPORT

Sample #:	A4.02881F	QC batch #:	0003351A
Matrix:	SOIL	Prep batch #:	0008897N
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.503e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	82.47 %	Analyst:	PMT
Ash/dry weight:	82.00 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/25/2004 18:05	1000.0	AS33	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
Th227	2.09e-01	1.0e-01	6.3e-02	PCI/GDRY	08/24/2004
Th228	1.58e+00	2.6e-01	6.2e-02	PCI/GDRY	08/24/2004
Th230	1.73e+00	2.7e-01	2.9e-02	PCI/GDRY	08/24/2004
Th232	1.42e+00	2.4e-01	3.4e-02	PCI/GDRY	08/24/2004

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400031**

SAMPLE ANALYSIS REPORT

Sample #:	A4.02882G	QC batch #:	0003351A
Matrix:	SOIL	Prep batch #:	0008897N
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.520e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	94.04 %	Analyst:	PMT
Ash/dry weight:	86.80 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/25/2004 18:05	1000.0	AS34	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
Th227	9.39e-02	8.1e-02	9.1e-02	PCI/GDRY	08/24/2004
Th228	1.01e+00	2.0e-01	7.6e-02	PCI/GDRY	08/24/2004
Th230	1.27e+00	2.3e-01	4.5e-02	PCI/GDRY	08/24/2004
Th232	9.36e-01	1.9e-01	4.0e-02	PCI/GDRY	08/24/2004

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400031**

SAMPLE ANALYSIS REPORT

Sample #:	A4.02883H	QC batch #:	0003351A
Matrix:	SOIL	Prep batch #:	0008897N
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.508e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	87.60 %	Analyst:	PMT
Ash/dry weight:	79.20 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/25/2004 18:05	1000.0	AS35	DPG

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2\sigma$ Uncertainty	MDC	Unit	Date
Th227	2.13e-01	1.1e-01	7.6e-02	PCI/GDRY	08/24/2004
Th228	1.03e+00	2.0e-01	6.8e-02	PCI/GDRY	08/24/2004
Th230	1.67e+00	2.8e-01	4.5e-02	PCI/GDRY	08/24/2004
Th232	8.81e-01	1.8e-01	4.1e-02	PCI/GDRY	08/24/2004

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400031**

SAMPLE ANALYSIS REPORT

Sample #:	A4.02884J	QC batch #:	0003351A
Matrix:	SOIL	Prep batch #:	0008897N
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.511e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	90.40 %	Analyst:	PMT
Ash/dry weight:	88.80 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/25/2004 18:05	1000.0	AS38	DPG

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2\sigma$ Uncertainty	MDC	Unit	Date
Th227	7.17e-02	7.6e-02	1.0e-01	PCI/GDRY	08/24/2004
Th228	5.87e-01	1.4e-01	6.9e-02	PCI/GDRY	08/24/2004
Th230	1.03e+00	2.0e-01	4.2e-02	PCI/GDRY	08/24/2004
Th232	3.87e-01	1.1e-01	4.5e-02	PCI/GDRY	08/24/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400031

SAMPLE ANALYSIS REPORT

Sample #:	A4.02885K	QC batch #:	0003351A
Matrix:	SOIL	Prep batch #:	0008897N
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.510e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	84.70 %	Analyst:	PMT
Ash/dry weight:	86.40 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/25/2004 18:05	1000.0	AS39	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
Th227	1.57e-01	8.8e-02	6.3e-02	PCI/GDRY	08/24/2004
Th228	1.18e+00	2.1e-01	5.7e-02	PCI/GDRY	08/24/2004
Th230	1.22e+00	2.1e-01	1.7e-02	PCI/GDRY	08/24/2004
Th232	8.97e-01	1.7e-01	1.7e-02	PCI/GDRY	08/24/2004

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400031**

SAMPLE ANALYSIS REPORT

Sample #:	A4.02886L	QC batch #:	0003351A
Matrix:	SOIL	Prep batch #:	0008897N
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.512e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	92.36 %	Analyst:	PMT
Ash/dry weight:	89.20 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/25/2004 18:05	1000.0	AS40	DPG

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2\sigma$ Uncertainty	MDC	Unit	Date
Th227	7.98e-02	7.0e-02	6.3e-02	PCI/GDRY	08/24/2004
Th228	6.93e-01	1.6e-01	7.1e-02	PCI/GDRY	08/24/2004
Th230	7.44e-01	1.6e-01	3.4e-02	PCI/GDRY	08/24/2004
Th232	4.05e-01	1.1e-01	1.9e-02	PCI/GDRY	08/24/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400031

SAMPLE ANALYSIS REPORT

Sample #:	A4.02887M	QC batch #:	0003351A
Matrix:	SOIL	Prep batch #:	0008897N
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.595e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	92.86 %	Analyst:	PMT
Ash/dry weight:	88.40 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/26/2004 17:41	1000.0	AS33	DPG

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2\sigma$ Uncertainty	MDC	Unit	Date
Th227	5.62e-02	5.8e-02	6.5e-02	PCI/GDRY	08/24/2004
Th228	6.91e-01	1.5e-01	6.2e-02	PCI/GDRY	08/24/2004
Th230	8.67e-01	1.7e-01	2.9e-02	PCI/GDRY	08/24/2004
Th232	5.42e-01	1.3e-01	3.4e-02	PCI/GDRY	08/24/2004

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400031**

SAMPLE ANALYSIS REPORT

Sample #:	A4.02888N	QC batch #:	0003351A
Matrix:	SOIL	Prep batch #:	0008897N
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.537e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	93.24 %	Analyst:	PMT
Ash/dry weight:	90.00 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/26/2004 17:39	1000.0	AS34	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
Th227	5.85e-02	6.9e-02	9.3e-02	PCI/GDRY	08/24/2004
Th228	5.08e-01	1.3e-01	7.5e-02	PCI/GDRY	08/24/2004
Th230	7.41e-01	1.6e-01	4.5e-02	PCI/GDRY	08/24/2004
Th232	3.20e-01	1.0e-01	4.0e-02	PCI/GDRY	08/24/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400031

SAMPLE ANALYSIS REPORT

Sample #:	A4.02889P	QC batch #:	0003351A
Matrix:	SOIL	Prep batch #:	0008918A
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.515e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	88.96 %	Analyst:	PMT
Ash/dry weight:	78.40 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/30/2004 18:47	1000.0	AS33	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
Th227	2.09e-01	1.0e-01	6.3e-02	PCI/GDRY	08/27/2004
Th228	1.01e+00	1.8e-01	5.8e-02	PCI/GDRY	08/27/2004
Th230	1.20e+00	2.1e-01	2.7e-02	PCI/GDRY	08/27/2004
Th232	1.03e+00	1.9e-01	3.1e-02	PCI/GDRY	08/27/2004

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400031**

SAMPLE ANALYSIS REPORT

Sample #:	A4.02890G	QC batch #:	0003351A
Matrix:	SOIL	Prep batch #:	0008918A
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.529e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	94.92 %	Analyst:	PMT
Ash/dry weight:	80.00 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/30/2004 18:47	1000.0	AS34	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
Th227	2.23e-01	1.2e-01	1.0e-01	PCI/GDRY	08/27/2004
Th228	6.50e-01	1.6e-01	7.8e-02	PCI/GDRY	08/27/2004
Th230	8.69e-01	1.8e-01	4.6e-02	PCI/GDRY	08/27/2004
Th232	5.36e-01	1.4e-01	4.1e-02	PCI/GDRY	08/27/2004

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400031**

SAMPLE ANALYSIS REPORT

Sample #:	A4.02891H	QC batch #:	0003351A
Matrix:	SOIL	Prep batch #:	0008918A
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.536e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	89.80 %	Analyst:	PMT
Ash/dry weight:	87.60 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/30/2004 18:47	1000.0	AS35	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
.Th227	1.45e-01	9.1e-02	7.2e-02	PCI/GDRY	08/27/2004
Th228	1.12e+00	2.1e-01	6.1e-02	PCI/GDRY	08/27/2004
Th230	1.13e+00	2.1e-01	4.0e-02	PCI/GDRY	08/27/2004
Th232	1.04e+00	1.9e-01	3.6e-02	PCI/GDRY	08/27/2004

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400031**

SAMPLE ANALYSIS REPORT

Sample #:	A4.02892J	QC batch #:	0003351A
Matrix:	SOIL	Prep batch #:	0008918A
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.539e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	98.99 %	Analyst:	PMT
Ash/dry weight:	93.20 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/30/2004 18:47	1000.0	AS38	DPG

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2\sigma$ Uncertainty	MDC	Unit	Date
Th227	8.18e-02	9.8e-02	1.4e-01	PCI/GDRY	08/27/2004
Th228	3.78e-01	1.2e-01	8.6e-02	PCI/GDRY	08/27/2004
Th230	4.44e-01	1.3e-01	5.2e-02	PCI/GDRY	08/27/2004
Th232	1.96e-01	8.4e-02	5.7e-02	PCI/GDRY	08/27/2004

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400031**

SAMPLE ANALYSIS REPORT

Sample #:	A4.02893K	QC batch #:	0003351A
Matrix:	SOIL	Prep batch #:	0008918A
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.506e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	89.63 %	Analyst:	PMT
Ash/dry weight:	86.40 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/30/2004 18:47	1000.0	AS39	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
Th227	3.23e-01	1.4e-01	7.5e-02	PCI/GDRY	08/27/2004
Th228	2.25e+00	3.4e-01	6.3e-02	PCI/GDRY	08/27/2004
Th230	9.00e-01	1.8e-01	1.8e-02	PCI/GDRY	08/27/2004
Th232	2.93e+00	4.2e-01	1.8e-02	PCI/GDRY	08/27/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400031

SAMPLE ANALYSIS REPORT

Sample #:	A4.02894L	QC batch #:	0003351A
Matrix:	SOIL	Prep batch #:	0008918A
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.532e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	89.95 %	Analyst:	PMT
Ash/dry weight:	89.20 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/30/2004 18:47	1000.0	AS40	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
Th227	1.38e-01	9.8e-02	7.5e-02	PCI/GDRY	08/27/2004
Th228	9.42e-01	2.0e-01	7.9e-02	PCI/GDRY	08/27/2004
Th230	7.97e-01	1.8e-01	3.7e-02	PCI/GDRY	08/27/2004
Th232	7.70e-01	1.7e-01	2.2e-02	PCI/GDRY	08/27/2004

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400031**

SAMPLE ANALYSIS REPORT

Sample #:	A4.02895M	QC batch #:	0003351A
Matrix:	SOIL	Prep batch #:	0008918A
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.524e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	91.98 %	Analyst:	PMT
Ash/dry weight:	85.60 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/31/2004 17:06	1000.0	AS33	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
Th227	3.51e-01	1.5e-01	8.5e-02	PCI/GDRY	08/27/2004
Th228	1.38e+00	2.5e-01	7.6e-02	PCI/GDRY	08/27/2004
Th230	9.12e-01	1.9e-01	3.5e-02	PCI/GDRY	08/27/2004
Th232	1.17e+00	2.2e-01	4.1e-02	PCI/GDRY	08/27/2004

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400031**

SAMPLE ANALYSIS REPORT

Sample #:	A4.02896N	QC batch #:	0003351A
Matrix:	SOIL	Prep batch #:	0008918A
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.552e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	94.83 %	Analyst:	PMT
Ash/dry weight:	87.60 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/31/2004 17:06	1000.0	AS34	DPG

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2\sigma$ Uncertainty	MDC	Unit	Date
Th227	3.13e-01	1.5e-01	1.1e-01	PCI/GDRY	08/27/2004
Th228	1.10e+00	2.2e-01	8.5e-02	PCI/GDRY	08/27/2004
Th230	7.80e-01	1.8e-01	5.0e-02	PCI/GDRY	08/27/2004
Th232	1.05e+00	2.1e-01	4.5e-02	PCI/GDRY	08/27/2004

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400031**

SAMPLE ANALYSIS REPORT

QC Sample #: RBK-00476852E

QC batch #: 0003351A

Prep batch #: 0008895L

Prep procedure: N/A

Analysis procedure: NAREL TH-EICHROM

Analyst: PMT

QC type: RBK

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
08/24/2004 17:42	1000.0	AS34	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
Th227	-1.00e-03	9.6e-03	2.2e-02	PCI	08/23/2004
Th228	3.40e-02	1.7e-02	1.9e-02	PCI	08/23/2004
Th230	0.00e+00	5.1e-03	1.1e-02	PCI	08/23/2004
Th232	-1.08e-03	3.7e-03	9.9e-03	PCI	08/23/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400031

QC BATCH SUMMARY

QC batch #: 0003351A
 Preparation procedure: N/A
 Analysis procedure: NAREL TH-EICHROM

NAREL Sample #	QC Type	Yield (%)	± 2σ Uncertainty (%)	Analyst
A4.02877K		98.09 %	3.01 %	PMT
A4.02877K	MS	92.26 %	2.83 %	PMT
A4.02877K	MSD	98.28 %	3.01 %	PMT
A4.02878L		101.12 %	3.04 %	PMT
A4.02879M		97.35 %	2.99 %	PMT
A4.02880E		102.24 %	3.11 %	PMT
A4.02880E	DUP	88.96 %	2.79 %	PMT
A4.02881F		93.80 %	2.94 %	PMT
A4.02882G		86.56 %	2.72 %	PMT
A4.02883H		73.06 %	2.41 %	PMT
A4.02884J		93.23 %	2.88 %	PMT
A4.02885K		96.81 %	2.99 %	PMT
A4.02886L		87.81 %	2.79 %	PMT
A4.02887M		98.73 %	3.04 %	PMT
A4.02888N		90.28 %	2.85 %	PMT
A4.02889P		96.48 %	3.16 %	PMT
A4.02890G		78.34 %	2.65 %	PMT
A4.02891H		90.05 %	2.97 %	PMT
A4.02892J		77.04 %	2.62 %	PMT
A4.02893K		87.34 %	2.90 %	PMT
A4.02894L		78.53 %	2.70 %	PMT
A4.02895M		80.49 %	2.73 %	PMT
A4.02896N		77.88 %	2.68 %	PMT
RBK-00476852E *	RBK	102.09 %	3.10 %	PMT

* Samples marked with an asterisk are not in this sample delivery group but were analyzed with it for QC purposes.

**National Air and Radiation Environmental Laboratory
QC Batch Report**

QC Batch #: 0003351A

Analytical Procedure: NAREL TH-EICHROM

REAGENT BLANKS (PCI)

Sample ID	Nuclide	Activity $\pm 2\sigma$	Prep Date
00476852E	TH227	-1.00e-03 \pm 9.6e-03	2004-08-23
00476852E	TH228	3.40e-02 \pm 1.7e-02	2004-08-23
00476852E	TH230	0.00e+00 \pm 5.1e-03	2004-08-23
00476852E	TH232	-1.08e-03 \pm 3.7e-03	2004-08-23

LABORATORY DUPLICATES (PCI/GASH)

Sample ID	Nuclide	Original $\pm 2\sigma$	Duplicate $\pm 2\sigma$	RPD	Z
A4.02880E	TH227	5.11e-02 \pm 5.5e-02	6.94e-02 \pm 7.1e-02	30.36	0.40 OK
A4.02880E	TH228	7.86e-01 \pm 1.7e-01	8.71e-01 \pm 1.9e-01	10.31	0.62 OK
A4.02880E	TH230	9.21e-01 \pm 1.8e-01	7.75e-01 \pm 1.7e-01	17.17	-1.05 OK
A4.02880E	TH232	7.69e-01 \pm 1.6e-01	7.86e-01 \pm 1.7e-01	2.17	0.13 OK

MATRIX SPIKES (PCI/GASH)

Sample ID	Nuclide	Amt Added $\pm 2\sigma$	Native $\pm 2\sigma$	Measured $\pm 2\sigma$	%R	Z
A4.02877K	TH227	NO SPIKE DATA				
A4.02877K	TH228	NO SPIKE DATA				
A4.02877K	TH230	2.59e+01 \pm 2.2%	2.87e-01 \pm 9.0e-02	2.67e+01 \pm 3.1e+00	101.84	0.23 OK
A4.02877K	TH232	NO SPIKE DATA				

MATRIX SPIKE DUPLICATES (PCI/GASH)

Sample ID	Nuclide	Amt Added $\pm 2\sigma$	Measured $\pm 2\sigma$	RPD	Z	%R	Z
A4.02877K	TH227	NO SPIKE DATA					
A4.02877K	TH228	NO SPIKE DATA					
A4.02877K	TH230	2.57e+01 \pm 2.2%	2.41e+01 \pm 2.8e+00	9.58	0.88 OK	92.53	-1.04 OK
A4.02877K	TH232	NO SPIKE DATA					

Analyst:

Paula M. Thaxton

9/2/04

Thaxton, Paula M.

QA Officer:

Karen D. McLean

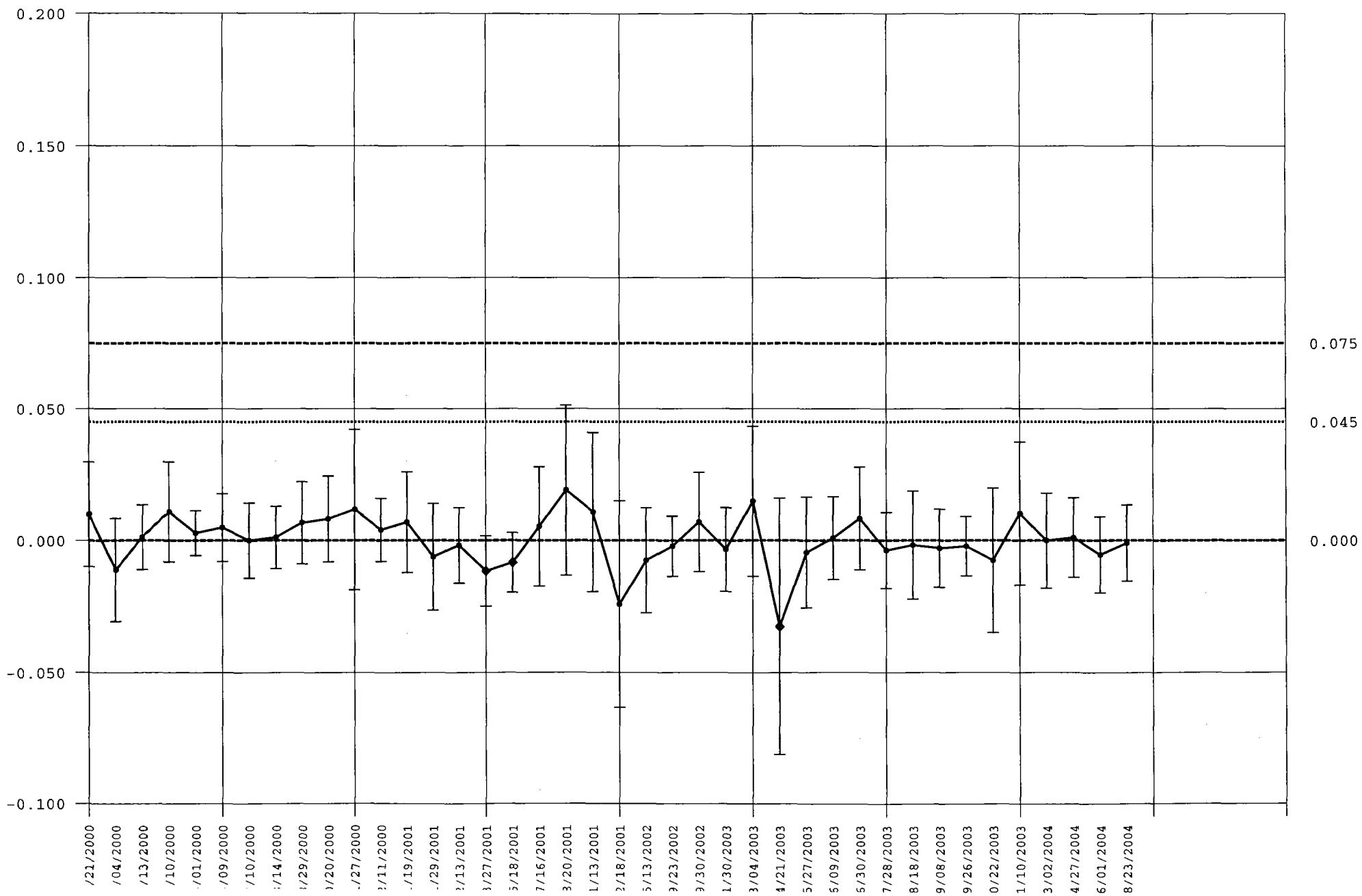
9/2/04

Reagent Blanks

Analyte: TH227

Procedure: NAREL TH-EICHROM

Analyst: Thaxton, Paula M.

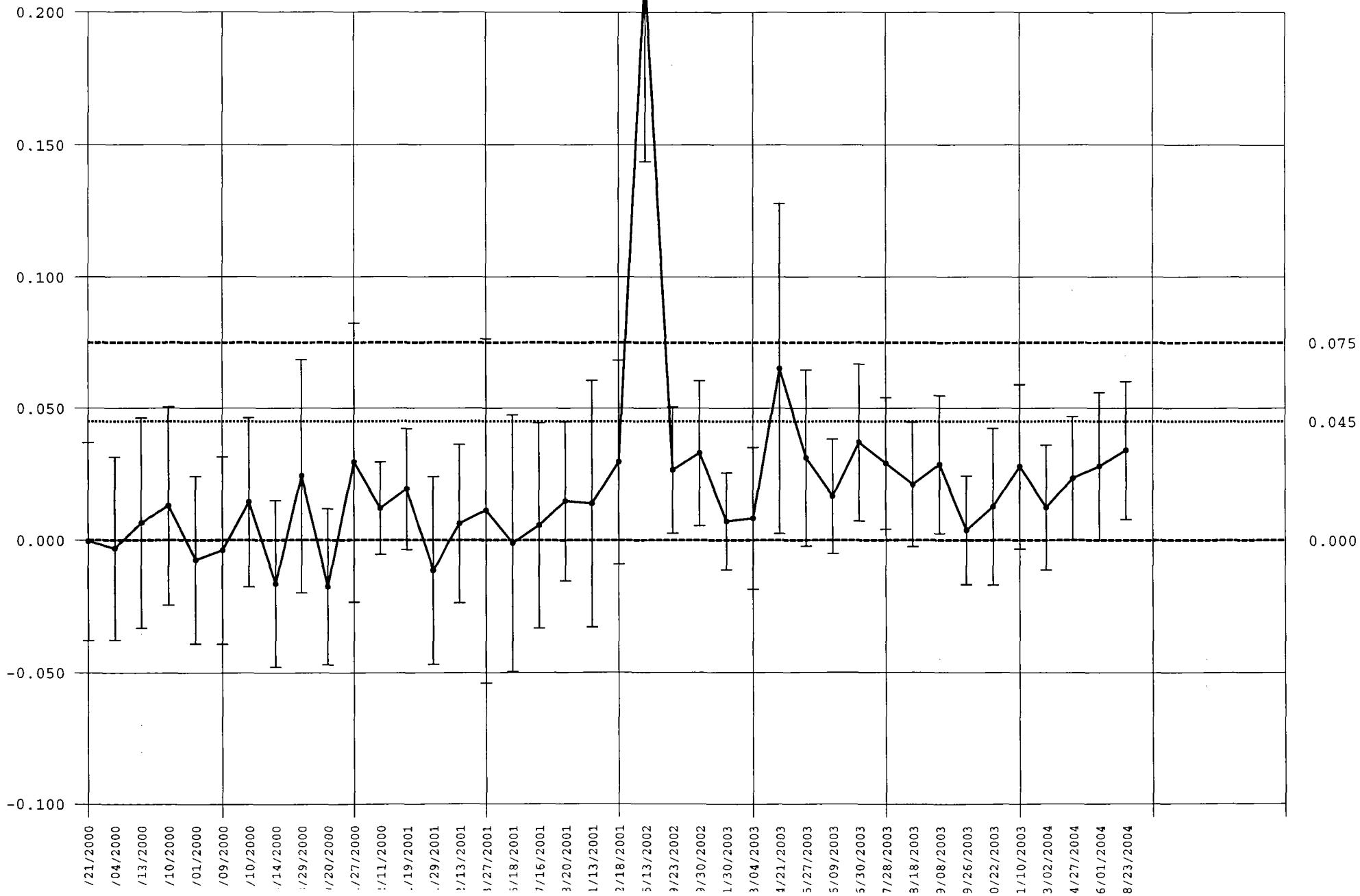


Reagent Blanks

Analyte: TH228

Procedure: NAREL TH-EICHROM

Analyst: Thaxton, Paula M.

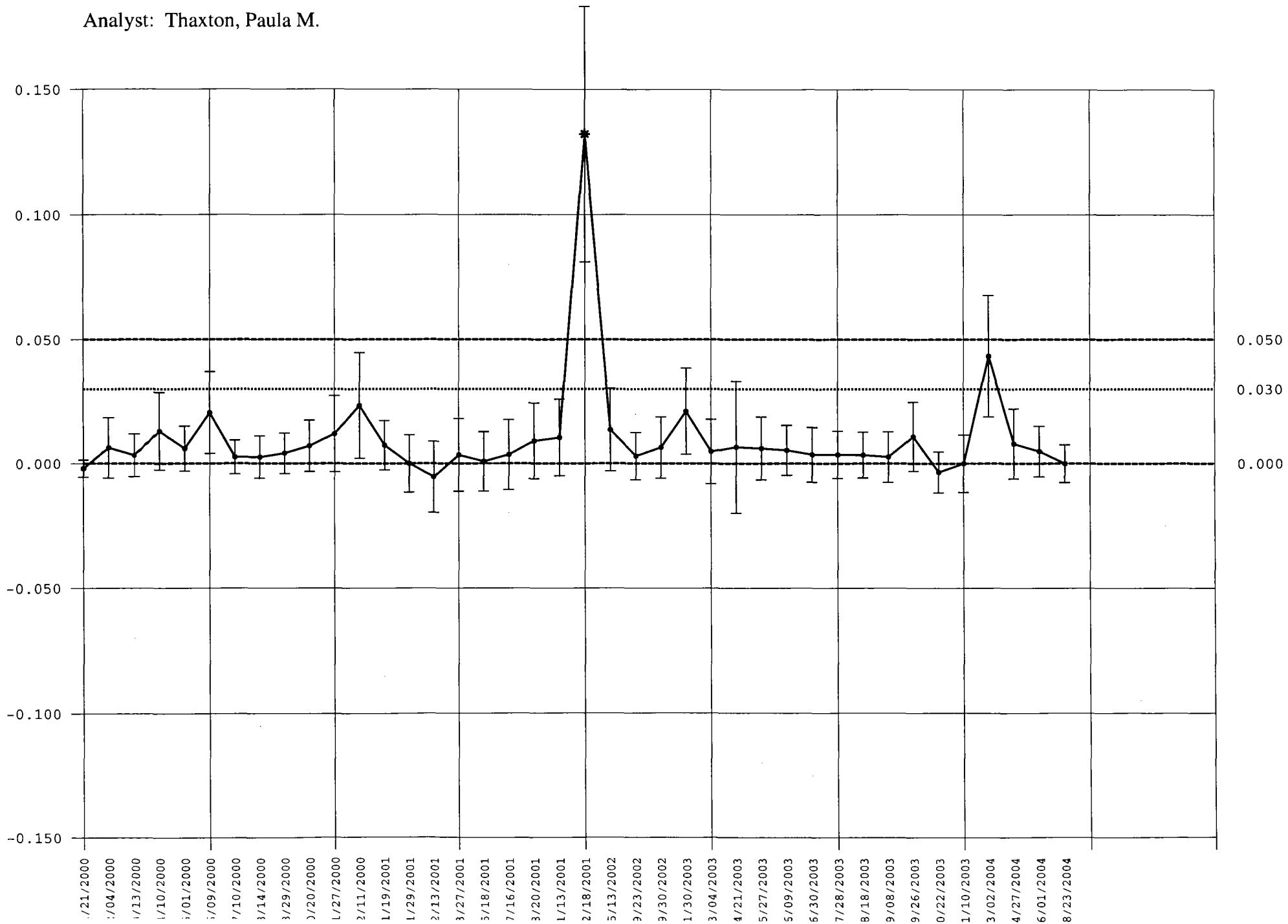


Reagent Blanks

Analyte: TH230

Procedure: NAREL TH-EICHROM

Analyst: Thaxton, Paula M.

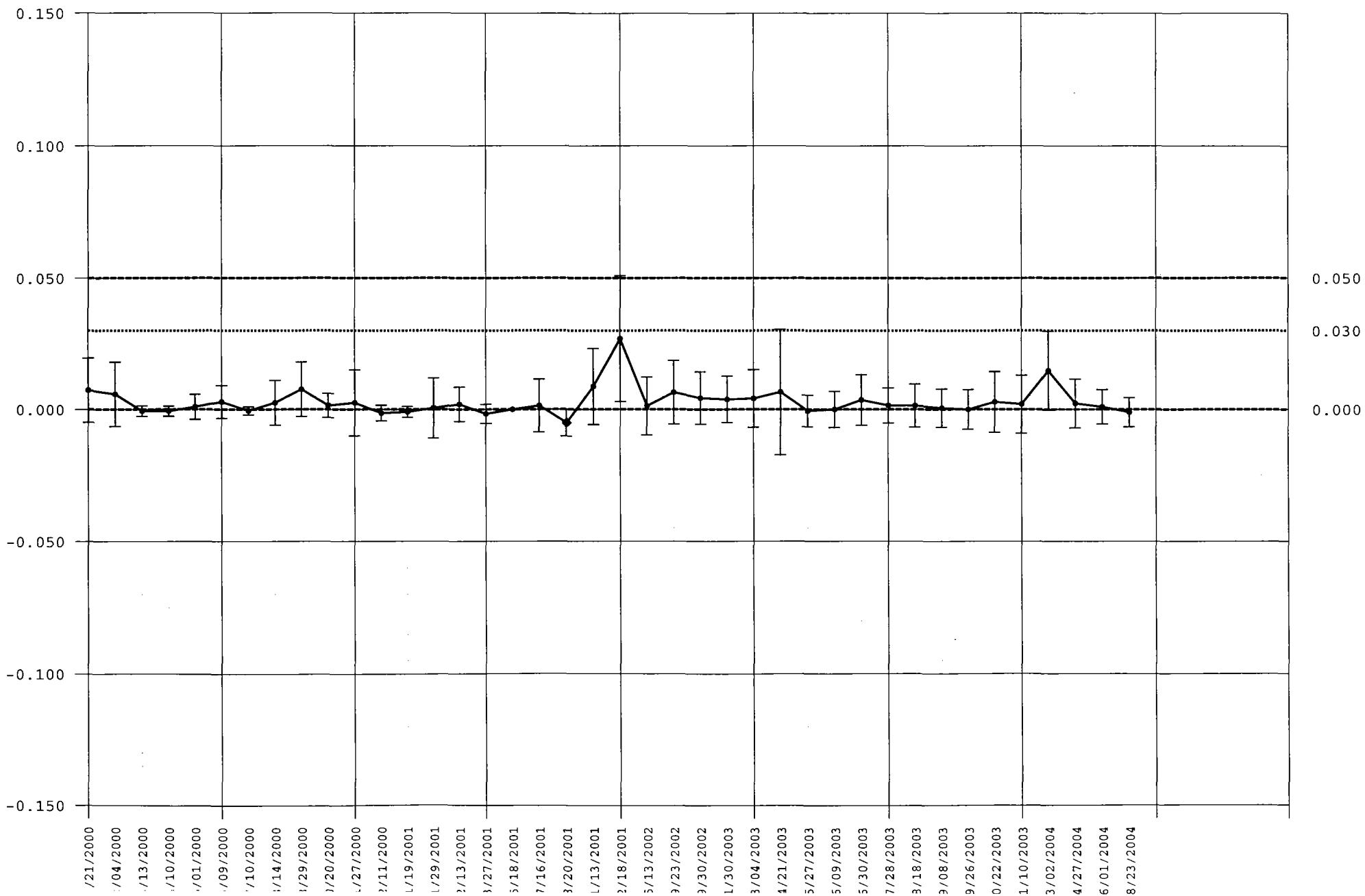


Reagent Blanks

Analyte: TH232

Procedure: NAREL TH-EICHROM

Analyst: Thaxton, Paula M.



U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES

REPORT OF SAMPLE DELIVERY GROUP #0400032

Project: LINDSAY LIGHT II
 Analysis Procedure: Actinides (Uranium) by Extraction Chromatography
 Date Reported: 10/05/2004

SAMPLES

NAREL Sample #	Client Sample ID	Type	Matrix	Date Collected	Date Received
A4.02897P	11C#1	SAM	SOIL	04/04/2003	06/10/2004
A4.02898Q	11C#2	SAM	SOIL	04/04/2003	06/10/2004
A4.02899R	11D	SAM	SOIL	04/04/2003	06/10/2004
A4.02900Q	9D/9C NE	SAM	SOIL	04/11/2003	06/10/2004
A4.02901R	9D/9C SE	SAM	SOIL	04/11/2003	06/10/2004
A4.02902T	9D/9C NW	SAM	SOIL	04/11/2003	06/10/2004
A4.02903U	9D/9C SW	SAM	SOIL	04/11/2003	06/10/2004
A4.02904V	10D#2	SAM	SOIL	04/11/2003	06/10/2004
A4.02905W	C-218 (73)	SAM	SOIL	06/20/2003	06/10/2004
A4.02906X	C-201(31)#1	SAM	SOIL	07/08/2003	06/10/2004
A4.02907Y	C-201(31)#2	SAM	SOIL	07/08/2003	06/10/2004
A4.02908Z	12C#1	SAM	SOIL	08/27/2003	06/10/2004
A4.02909A	12C#2	SAM	SOIL	08/27/2003	06/10/2004
A4.02910T	12C#3	SAM	SOIL	08/27/2003	06/10/2004
A4.02911U	C-2-3 CAISSON	SAM	SOIL	11/11/2003	06/10/2004
A4.02912V	13D EAST	SAM	SOIL	11/11/2003	06/10/2004
A4.02913W	13D WEST	SAM	SOIL	11/11/2003	06/10/2004

EXCEPTIONS

1. Packaging and Shipping - No problems were observed.
2. Documentation - No problems were observed.
3. Sample Preparation - No problems were encountered.
4. Analysis - No problems were encountered.
5. Holding Times - All holding times were met.

QUALITY CONTROL

1. QC samples - All QC analysis results met NAREL acceptance criteria.
2. Yields - All chemical yields were within acceptance limits.
3. Instruments - Response and background checks for all instruments used in these analyses met NAREL acceptance criteria.

CERTIFICATION

I certify that this data report complies with the terms and conditions of the Quality Assurance Project Plan, except as noted above. Release of the data contained in this report has been authorized by the Chief of the Monitoring and Analytical Services Branch and the NAREL Quality Assurance Coordinator, or their designees, as verified by the following signatures.

Mary Wisdom 10/7/04

Mary F. Wisdom Date
Quality Assurance Coordinator

John Griggs 10/7/04

John Griggs, Ph.D. Date
Chief, Monitoring and Analytical Services Branch

GENERAL INFORMATION

SAMPLE TYPES

BLD	Blind sample
FBK	Field blank
SAM	Normal sample

ANALYSIS QC TYPES

ANA	Normal analysis
DUP	Laboratory duplicate
LCS	Laboratory control sample (blank spike)
MS	Matrix spike
MSD	Matrix spike duplicate
RBK	Reagent blank

QUALITY INDICATORS

RPD	Relative Percent Difference
%R	Percent Recovery
Z	Number of standard deviations by which a QC measurement differs from the expected value

EVALUATION OF QC ANALYSES

A reagent blank result is considered unacceptable if it is more than 3 standard deviations below zero or more than 3 standard deviations above a predetermined upper control limit. For some analyses NAREL has set the upper control limit at zero. For others the control limit is a small positive number.

NAREL evaluates the results of duplicate and spike analyses using "Z scores." A Z score is the number of standard deviations by which the QC result differs from its ideal value. The score is considered acceptable if its absolute value is not greater than 3.

The Z score for a spiked sample is computed by dividing the difference between the measured value and the target value by the combined standard uncertainty of the difference.

The Z score for a duplicate analysis is computed by dividing the difference between the two measured values by the combined standard uncertainty of the difference. When the precision of paired MS/MSD analyses is evaluated, the native sample activity is subtracted from each measured value and the net concentrations are then converted to total activities before the Z score is computed.

Each standard uncertainty used to compute a Z score includes an additional fixed term to represent sources of measurement error other than counting error. This additional term is not used in the evaluation of reagent blanks.

NAREL reports the "relative percent difference," or RPD, between duplicate results and the "percent recovery," or %R, for spiked analyses, but does not use these values for evaluation.

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES
SDG #0400032

ANALYSIS SUMMARY

Analysis Procedure: NAREL U-EICHROM
 Title: Actinides (Uranium) by Extraction Chromatography

NAREL Sample #	QC Type	Preparation Procedure	Date Completed	Prep Batch #	QC Batch #
A4.02897P		N/A	09/21/2004	0008932Y	0003364F
A4.02897P	MS	N/A	09/21/2004	0008932Y	0003364F
A4.02897P	MSD	N/A	09/21/2004	0008932Y	0003364F
A4.02898Q		N/A	09/21/2004	0008932Y	0003364F
A4.02899R		N/A	09/21/2004	0008932Y	0003364F
A4.02899R	DUP	N/A	09/21/2004	0008932Y	0003364F
A4.02900Q		N/A	09/22/2004	0008960C	0003364F
A4.02901R		N/A	09/22/2004	0008960C	0003364F
A4.02902T		N/A	09/22/2004	0008960C	0003364F
A4.02903U		N/A	09/22/2004	0008960C	0003364F
A4.02904V		N/A	09/22/2004	0008960C	0003364F
A4.02905W		N/A	09/22/2004	0008960C	0003364F
A4.02906X		N/A	09/22/2004	0008960C	0003364F
A4.02907Y		N/A	09/28/2004	0008970E	0003364F
A4.02908Z		N/A	09/28/2004	0008970E	0003364F
A4.02909A		N/A	10/01/2004	0008970E	0003364F
A4.02910T		N/A	10/01/2004	0008970E	0003364F
A4.02911U		N/A	09/28/2004	0008970E	0003364F
A4.02912V		N/A	09/28/2004	0008970E	0003364F
A4.02913W		N/A	09/28/2004	0008970E	0003364F
RBK-00477412M *	RBK	N/A	09/21/2004	0008932Y	0003364F

* Samples marked with an asterisk are not in this sample delivery group but were analyzed with it for QC purposes.

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES
SDG #0400032**

SAMPLE ANALYSIS REPORT

Sample #:	A4.02897P	QC batch #:	0003364F
Matrix:	SOIL	Prep batch #:	0008932Y
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.579e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	95.92 %	Analyst:	PMT
Ash/dry weight:	90.00 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/20/2004 18:03	1000.0	AS08	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
U234	6.66e-01	1.7e-01	2.5e-02	PCI/GDRY	09/20/2004
U235	2.10e-01	9.8e-02	3.0e-02	PCI/GDRY	09/20/2004
U238	7.16e-01	1.8e-01	5.7e-02	PCI/GDRY	09/20/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES
SDG #0400032

SAMPLE ANALYSIS REPORT

Sample #:	A4.02897P	QC batch #:	0003364F
Matrix:	SOIL	Prep batch #:	0008932Y
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.654e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	95.92 %	Analyst:	PMT
Ash/dry weight:	90.00 %	QC type:	MS

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/20/2004 18:03	1000.0	AS09	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
U234	7.40e+00	1.1e+00	1.0e-01	PCI/GDRY	09/20/2004
U235	4.42e-01	1.6e-01	3.8e-02	PCI/GDRY	09/20/2004
U238	8.23e+00	1.2e+00	5.5e-02	PCI/GDRY	09/20/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES
SDG #0400032

SAMPLE ANALYSIS REPORT

Sample #:	A4.02897P	QC batch #:	0003364F
Matrix:	SOIL	Prep batch #:	0008932Y
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.509e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	95.92 %	Analyst:	PMT
Ash/dry weight:	90.00 %	QC type:	MSD

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/20/2004 18:04	1000.0	AS10	DPG

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2\sigma$ Uncertainty	MDC	Unit	Date
U234	8.57e+00	1.2e+00	4.6e-02	PCI/GDRY	09/20/2004
U235	6.95e-01	2.0e-01	6.5e-02	PCI/GDRY	09/20/2004
U238	8.28e+00	1.2e+00	4.6e-02	PCI/GDRY	09/20/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES
SDG #0400032

SAMPLE ANALYSIS REPORT

Sample #:	A4.02898Q	QC batch #:	0003364F
Matrix:	SOIL	Prep batch #:	0008932Y
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.519e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	87.03 %	Analyst:	PMT
Ash/dry weight:	84.40 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/20/2004 18:04	1000.0	AS12	DPG

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2\sigma$ Uncertainty	MDC	Unit	Date
U234	1.59e+00	3.0e-01	2.4e-02	PCI/GDRY	09/20/2004
U235	7.40e-02	6.0e-02	5.0e-02	PCI/GDRY	09/20/2004
U238	1.60e+00	3.0e-01	4.2e-02	PCI/GDRY	09/20/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES
SDG #0400032

SAMPLE ANALYSIS REPORT

Sample #:	A4.02899R	QC batch #:	0003364F
Matrix:	SOIL	Prep batch #:	0008932Y
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.595e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	95.22 %	Analyst:	PMT
Ash/dry weight:	89.60 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/20/2004 18:03	1000.0	AS35	DPG

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2\sigma$ Uncertainty	MDC	Unit	Date
U234	1.06e+00	2.3e-01	4.4e-02	PCI/GDRY	09/20/2004
U235	1.70e-01	8.8e-02	3.0e-02	PCI/GDRY	09/20/2004
U238	1.15e+00	2.4e-01	5.1e-02	PCI/GDRY	09/20/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES
SDG #0400032

SAMPLE ANALYSIS REPORT

Sample #:	A4.02899R	QC batch #:	0003364F
Matrix:	SOIL	Prep batch #:	0008932Y
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.564e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	95.22 %	Analyst:	PMT
Ash/dry weight:	89.60 %	QC type:	DUP

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/20/2004 18:03	1000.0	AS36	DPG

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2\sigma$ Uncertainty	MDC	Unit	Date
U234	1.09e+00	2.3e-01	2.3e-02	PCI/GDRY	09/20/2004
U235	2.09e-01	9.6e-02	6.2e-02	PCI/GDRY	09/20/2004
U238	1.03e+00	2.2e-01	2.3e-02	PCI/GDRY	09/20/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES
SDG #0400032

SAMPLE ANALYSIS REPORT

Sample #:	A4.02900Q	QC batch #:	0003364F
Matrix:	SOIL	Prep batch #:	0008960C
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.502e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	91.54 %	Analyst:	PMT
Ash/dry weight:	89.20 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/21/2004 17:08	1000.0	AS01	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
U234	9.56e-01	2.2e-01	7.9e-02	PCI/GDRY	09/21/2004
U235	6.20e-02	5.7e-02	6.0e-02	PCI/GDRY	09/21/2004
U238	1.08e+00	2.3e-01	6.5e-02	PCI/GDRY	09/21/2004

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES
SDG #0400032**

SAMPLE ANALYSIS REPORT

Sample #:	A4.02901R	QC batch #:	0003364F
Matrix:	SOIL	Prep batch #:	0008960C
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.576e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	90.47 %	Analyst:	PMT
Ash/dry weight:	86.80 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/21/2004 17:08	1000.0	AS02	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
U234	9.62e-01	2.1e-01	6.0e-02	PCI/GDRY	09/21/2004
U235	3.56e-02	4.5e-02	5.1e-02	PCI/GDRY	09/21/2004
U238	1.17e+00	2.4e-01	6.0e-02	PCI/GDRY	09/21/2004

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES
SDG #0400032**

SAMPLE ANALYSIS REPORT

Sample #:	A4.02902T	QC batch #:	0003364F
Matrix:	SOIL	Prep batch #:	0008960C
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.526e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	93.55 %	Analyst:	PMT
Ash/dry weight:	84.80 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/21/2004 17:08	1000.0	AS03	DPG

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2\sigma$ Uncertainty	MDC	Unit	Date
U234	6.54e-01	1.7e-01	5.7e-02	PCI/GDRY	09/21/2004
U235	5.36e-02	5.5e-02	6.2e-02	PCI/GDRY	09/21/2004
U238	8.27e-01	2.0e-01	4.4e-02	PCI/GDRY	09/21/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES
SDG #0400032

SAMPLE ANALYSIS REPORT

Sample #:	A4.02903U	QC batch #:	0003364F
Matrix:	SOIL	Prep batch #:	0008960C
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.506e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	88.83 %	Analyst:	PMT
Ash/dry weight:	86.00 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/21/2004 17:08	1000.0	AS04	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
U234	1.08e+00	2.3e-01	6.8e-02	PCI/GDRY	09/21/2004
U235	8.34e-02	6.6e-02	7.2e-02	PCI/GDRY	09/21/2004
U238	1.09e+00	2.3e-01	6.0e-02	PCI/GDRY	09/21/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES
SDG #0400032

SAMPLE ANALYSIS REPORT

Sample #:	A4.02904V	QC batch #:	0003364F
Matrix:	SOIL	Prep batch #:	0008960C
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.631e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	94.81 %	Analyst:	PMT
Ash/dry weight:	92.00 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/21/2004 17:08	1000.0	AS06	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
U234	6.90e-01	1.8e-01	2.8e-02	PCI/GDRY	09/21/2004
U235	4.04e-02	5.7e-02	8.2e-02	PCI/GDRY	09/21/2004
U238	6.41e-01	1.7e-01	4.8e-02	PCI/GDRY	09/21/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES
SDG #0400032

SAMPLE ANALYSIS REPORT

Sample #:	A4.02905W	QC batch #:	0003364F
Matrix:	SOIL	Prep batch #:	0008960C
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.546e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	97.07 %	Analyst:	PMT
Ash/dry weight:	90.00 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/21/2004 17:08	1000.0	AS07	DPG

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2\sigma$ Uncertainty	MDC	Unit	Date
U234	7.43e-01	2.0e-01	1.1e-01	PCI/GDRY	09/21/2004
U235	2.00e-02	5.1e-02	8.9e-02	PCI/GDRY	09/21/2004
U238	8.23e-01	2.1e-01	9.3e-02	PCI/GDRY	09/21/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES
SDG #0400032

SAMPLE ANALYSIS REPORT

Sample #:	A4.02906X	QC batch #:	0003364F
Matrix:	SOIL	Prep batch #:	0008960C
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.509e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	89.37 %	Analyst:	PMT
Ash/dry weight:	87.60 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/21/2004 17:08	1000.0	AS08	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
U234	1.18e+00	2.3e-01	3.4e-02	PCI/GDRY	09/21/2004
U235	7.02e-02	5.0e-02	2.4e-02	PCI/GDRY	09/21/2004
U238	1.17e+00	2.2e-01	4.5e-02	PCI/GDRY	09/21/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES
SDG #0400032

SAMPLE ANALYSIS REPORT

Sample #:	A4.02907Y	QC batch #:	0003364F
Matrix:	SOIL	Prep batch #:	0008970E
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.515e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	89.72 %	Analyst:	PMT
Ash/dry weight:	88.00 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/27/2004 17:25	1000.0	AS19	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
U234	8.99e-01	2.2e-01	7.7e-02	PCI/GDRY	09/27/2004
U235	2.21e-01	1.2e-01	9.8e-02	PCI/GDRY	09/27/2004
U238	1.07e+00	2.5e-01	8.6e-02	PCI/GDRY	09/27/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES
SDG #0400032

SAMPLE ANALYSIS REPORT

Sample #:	A4.02908Z	QC batch #:	0003364F
Matrix:	SOIL	Prep batch #:	0008970E
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.526e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	82.13 %	Analyst:	PMT
Ash/dry weight:	85.60 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/27/2004 17:25	1000.0	AS20	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
U234	1.29e+00	2.8e-01	2.9e-02	PCI/GDRY	09/27/2004
U235	1.60e-01	9.5e-02	7.8e-02	PCI/GDRY	09/27/2004
U238	1.16e+00	2.6e-01	2.9e-02	PCI/GDRY	09/27/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES
SDG #0400032

SAMPLE ANALYSIS REPORT

Sample #:	A4.02909A	QC batch #:	0003364F
Matrix:	SOIL	Prep batch #:	0008970E
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.611e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	84.52 %	Analyst:	PMT
Ash/dry weight:	87.60 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/30/2004 16:03	1000.0	AS21	DPS

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2\sigma$ Uncertainty	MDC	Unit	Date
U234	1.73e+00	3.1e-01	6.0e-02	PCI/GDRY	09/30/2004
U235	1.71e-01	8.4e-02	2.7e-02	PCI/GDRY	09/30/2004
U238	1.91e+00	3.4e-01	6.3e-02	PCI/GDRY	09/30/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES
SDG #0400032

SAMPLE ANALYSIS REPORT

Sample #:	A4.02910T	QC batch #:	0003364F
Matrix:	SOIL	Prep batch #:	0008970E
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.518e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	92.44 %	Analyst:	PMT
Ash/dry weight:	82.00 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/30/2004 16:03	1000.0	AS22	DPS

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2\sigma$ Uncertainty	MDC	Unit	Date
U234	2.36e+00	4.2e-01	7.2e-02	PCI/GDRY	09/30/2004
U235	1.83e-01	1.0e-01	9.1e-02	PCI/GDRY	09/30/2004
U238	2.47e+00	4.3e-01	6.7e-02	PCI/GDRY	09/30/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES
SDG #0400032

SAMPLE ANALYSIS REPORT

Sample #:	A4.02911U	QC batch #:	0003364F
Matrix:	SOIL	Prep batch #:	0008970E
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.574e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	88.62 %	Analyst:	PMT
Ash/dry weight:	90.40 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/27/2004 17:25	1000.0	AS24	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
U234	9.37e-01	2.1e-01	5.1e-02	PCI/GDRY	09/27/2004
U235	2.01e-01	9.8e-02	6.1e-02	PCI/GDRY	09/27/2004
U238	1.01e+00	2.2e-01	2.5e-02	PCI/GDRY	09/27/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES
SDG #0400032

SAMPLE ANALYSIS REPORT

Sample #:	A4.02912V	QC batch #:	0003364F
Matrix:	SOIL	Prep batch #:	0008970E
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.572e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	87.86 %	Analyst:	PMT
Ash/dry weight:	89.20 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/27/2004 17:25	1000.0	AS26	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
U234	9.98e-01	2.1e-01	2.2e-02	PCI/GDRY	09/27/2004
U235	2.56e-01	1.0e-01	2.6e-02	PCI/GDRY	09/27/2004
U238	8.99e-01	1.9e-01	2.2e-02	PCI/GDRY	09/27/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES
SDG #0400032

SAMPLE ANALYSIS REPORT

Sample #:	A4.02913W	QC batch #:	0003364F
Matrix:	SOIL	Prep batch #:	0008970E
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.515e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	84.33 %	Analyst:	PMT
Ash/dry weight:	89.20 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/27/2004 17:25	1000.0	AS28	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
U234	1.44e+00	2.4e-01	1.6e-02	PCI/GDRY	09/27/2004
U235	2.23e-01	8.3e-02	3.4e-02	PCI/GDRY	09/27/2004
U238	1.53e+00	2.6e-01	2.8e-02	PCI/GDRY	09/27/2004

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES
SDG #0400032**

SAMPLE ANALYSIS REPORT

QC Sample #:	RBK-00477412M	QC batch #:	0003364F
		Prep batch #:	0008932Y
		Prep procedure:	N/A
		Analysis procedure:	NAREL U-EICHROM
		Analyst:	PMT
		QC type:	RBK

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/20/2004 18:03	1000.0	AS37	DPG

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2\sigma$ Uncertainty	MDC	Unit	Date
U234	6.92e-02	2.8e-02	1.8e-02	PCI	09/20/2004
U235	2.12e-02	1.8e-02	1.8e-02	PCI	09/20/2004
U238	4.75e-02	2.2e-02	1.3e-02	PCI	09/20/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
U ANALYSES
SDG #0400032

QC BATCH SUMMARY

QC batch #: 0003364F
 Preparation procedure: N/A
 Analysis procedure: NAREL U-EICHROM

NAREL Sample #	QC Type	Yield (%)	± 2σ Uncertainty (%)	Analyst
A4.02897P		69.89 %	5.21 %	PMT
A4.02897P	MS	81.64 %	6.69 %	PMT
A4.02897P	MSD	85.16 %	6.48 %	PMT
A4.02898Q		75.51 %	5.67 %	PMT
A4.02899R		72.67 %	5.62 %	PMT
A4.02899R	DUP	80.27 %	6.06 %	PMT
A4.02900Q		78.47 %	5.81 %	PMT
A4.02901R		84.23 %	6.35 %	PMT
A4.02902T		81.85 %	6.26 %	PMT
A4.02903U		87.59 %	6.57 %	PMT
A4.02904V		78.58 %	6.09 %	PMT
A4.02905W		72.41 %	5.74 %	PMT
A4.02906X		89.43 %	6.26 %	PMT
A4.02907Y		70.81 %	5.67 %	PMT
A4.02908Z		69.52 %	5.58 %	PMT
A4.02909A		82.64 %	6.24 %	PMT
A4.02910T		69.30 %	5.55 %	PMT
A4.02911U		85.01 %	6.52 %	PMT
A4.02912V		74.97 %	5.50 %	PMT
A4.02913W		94.71 %	6.48 %	PMT
RBK-00477412M *	RBK	73.49 %	5.69 %	PMT

* Samples marked with an asterisk are not in this sample delivery group but were analyzed with it for QC purposes.

National Air and Radiation Environmental Laboratory
QC Batch Report

QC Batch #: 0003364F

Analytical Procedure: NAREL U-EICHROM

REAGENT BLANKS (PCI)

Sample ID	Nuclide	Activity $\pm 2\sigma$	Prep Date
00477412M	U234	6.92e-02 \pm 2.8e-02	2004-09-07
00477412M	U235	2.12e-02 \pm 1.8e-02	2004-09-07
00477412M	U238	4.75e-02 \pm 2.2e-02	2004-09-07

LABORATORY DUPLICATES (PCI/GASH)

Sample ID	Nuclide	Original $\pm 2\sigma$	Duplicate $\pm 2\sigma$	RPD	Z
A4.02899R	U234	1.18e+00 \pm 2.6e-01	1.22e+00 \pm 2.5e-01	3.11	0.20 OK
A4.02899R	U235	1.90e-01 \pm 9.8e-02	2.33e-01 \pm 1.1e-01	20.45	0.59 OK
A4.02899R	U238	1.28e+00 \pm 2.7e-01	1.15e+00 \pm 2.4e-01	10.68	-0.69 OK

MATRIX SPIKES (PCI/GASH)

Sample ID	Nuclide	Amt Added $\pm 2\sigma$	Native $\pm 2\sigma$	Measured $\pm 2\sigma$	%R	Z
A4.02897P	U234	7.74e+00 \pm 2.2%	7.41e-01 \pm 1.9e-01	8.22e+00 \pm 1.2e+00	96.68	-0.39 OK
A4.02897P	U235	3.70e-01 \pm 2.1%	2.33e-01 \pm 1.1e-01	4.91e-01 \pm 1.8e-01	69.80	-1.04 OK
A4.02897P	U238	8.03e+00 \pm 2.1%	7.96e-01 \pm 2.0e-01	9.14e+00 \pm 1.3e+00	103.90	0.44 OK

MATRIX SPIKE DUPLICATES (PCI/GASH)

Sample ID	Nuclide	Amt Added $\pm 2\sigma$	Measured $\pm 2\sigma$	RPD	Z	%R	Z
A4.02897P	U234	8.19e+00 \pm 2.2%	9.53e+00 \pm 1.3e+00	10.44	0.89 OK	107.33	0.84 OK
A4.02897P	U235	3.91e-01 \pm 2.1%	7.73e-01 \pm 2.2e-01	65.64	1.80 OK	138.00	1.19 OK
A4.02897P	U238	8.50e+00 \pm 2.1%	9.20e+00 \pm 1.3e+00	4.94	0.42 OK	98.89	-0.14 OK

Analyst: _____

Thaxton, Paula M.

10/4/04

QA Officer: _____

Linda J. McIver

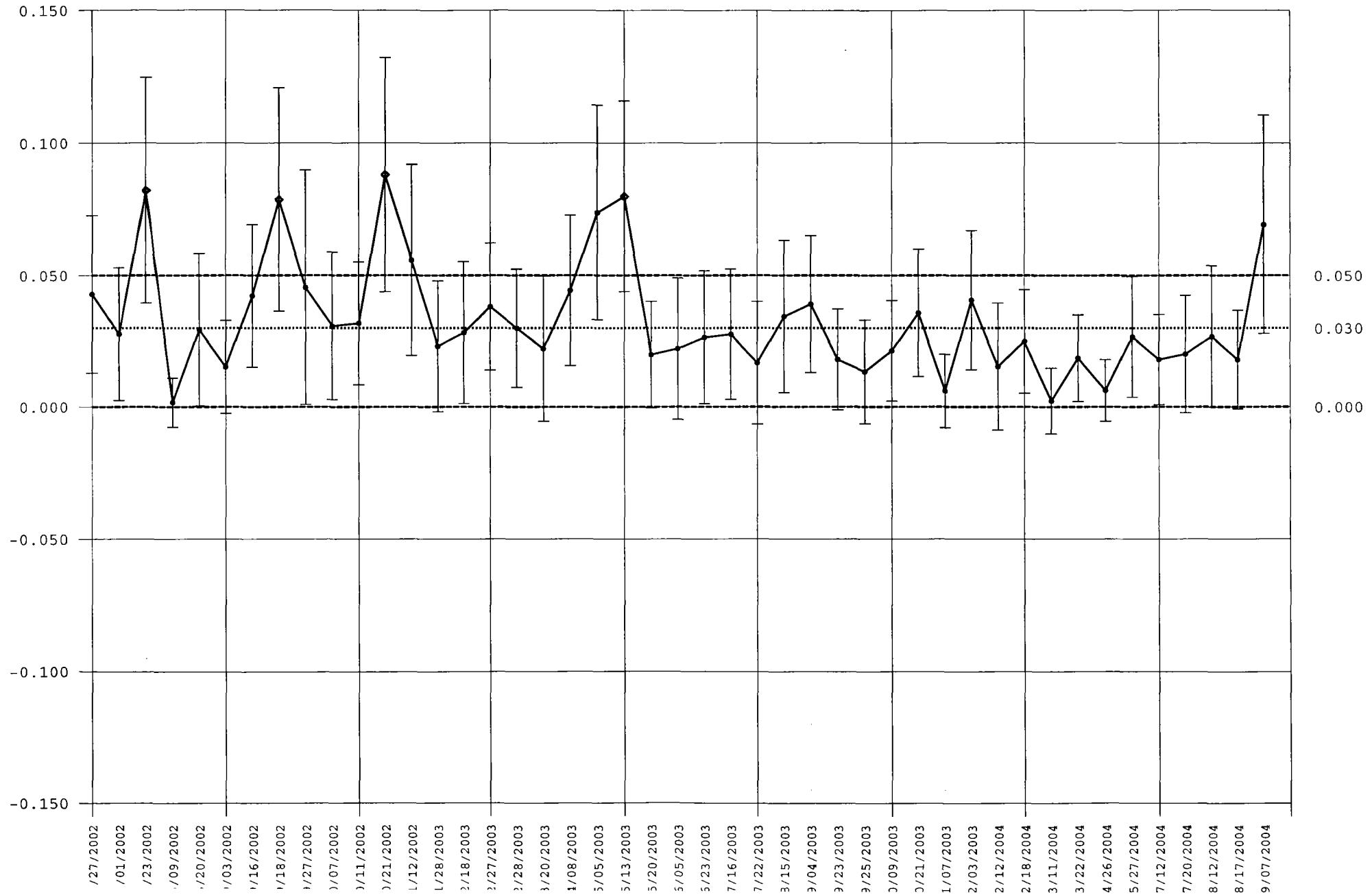
10/5/04

Reagent Blanks

Analyte: U234

Procedure: NAREL U-EICHROM

Analyst: Thaxton, Paula M.

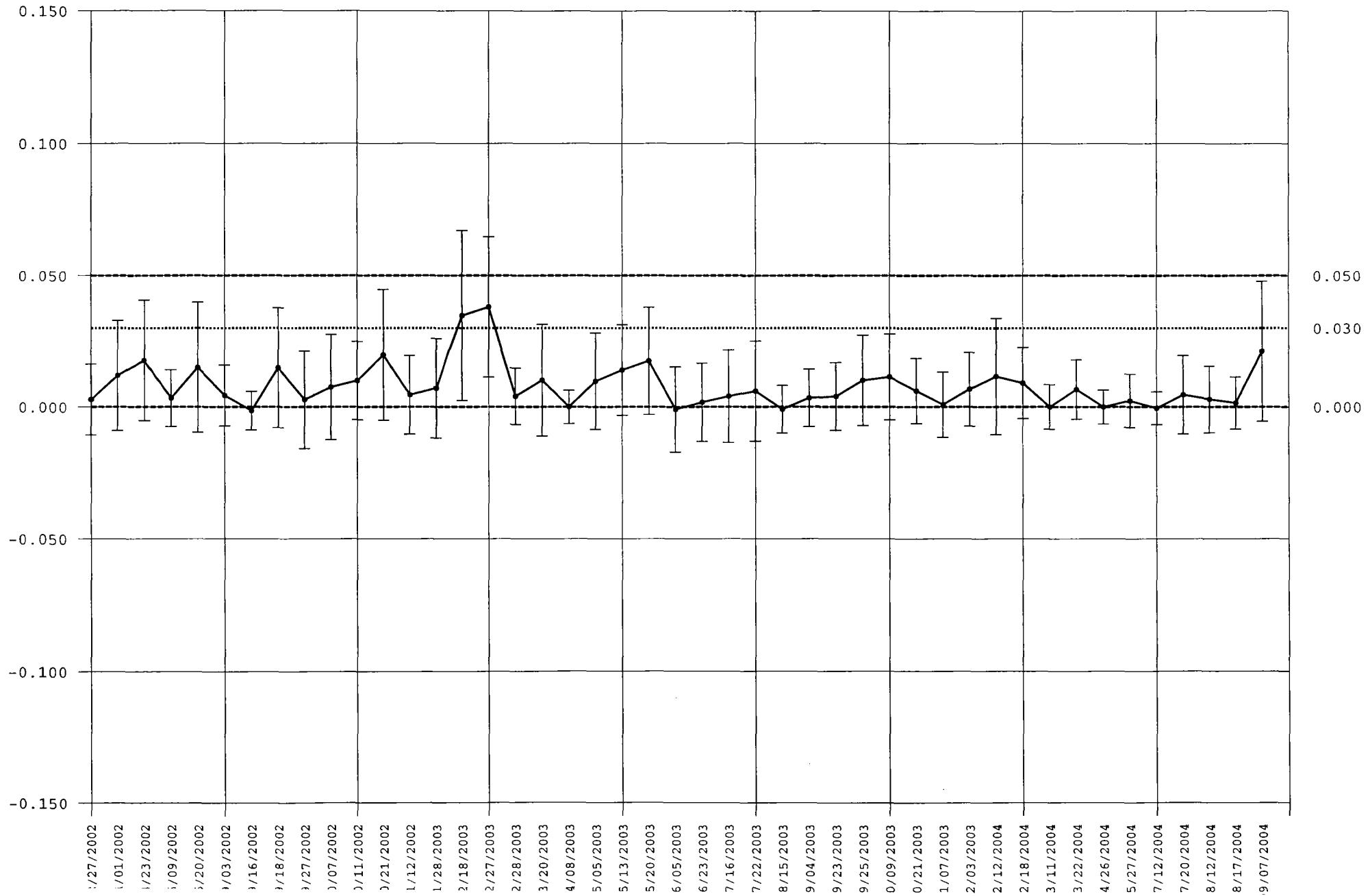


Reagent Blanks

Analyte: U235

Procedure: NAREL U-EICHROM

Analyst: Thaxton, Paula M.

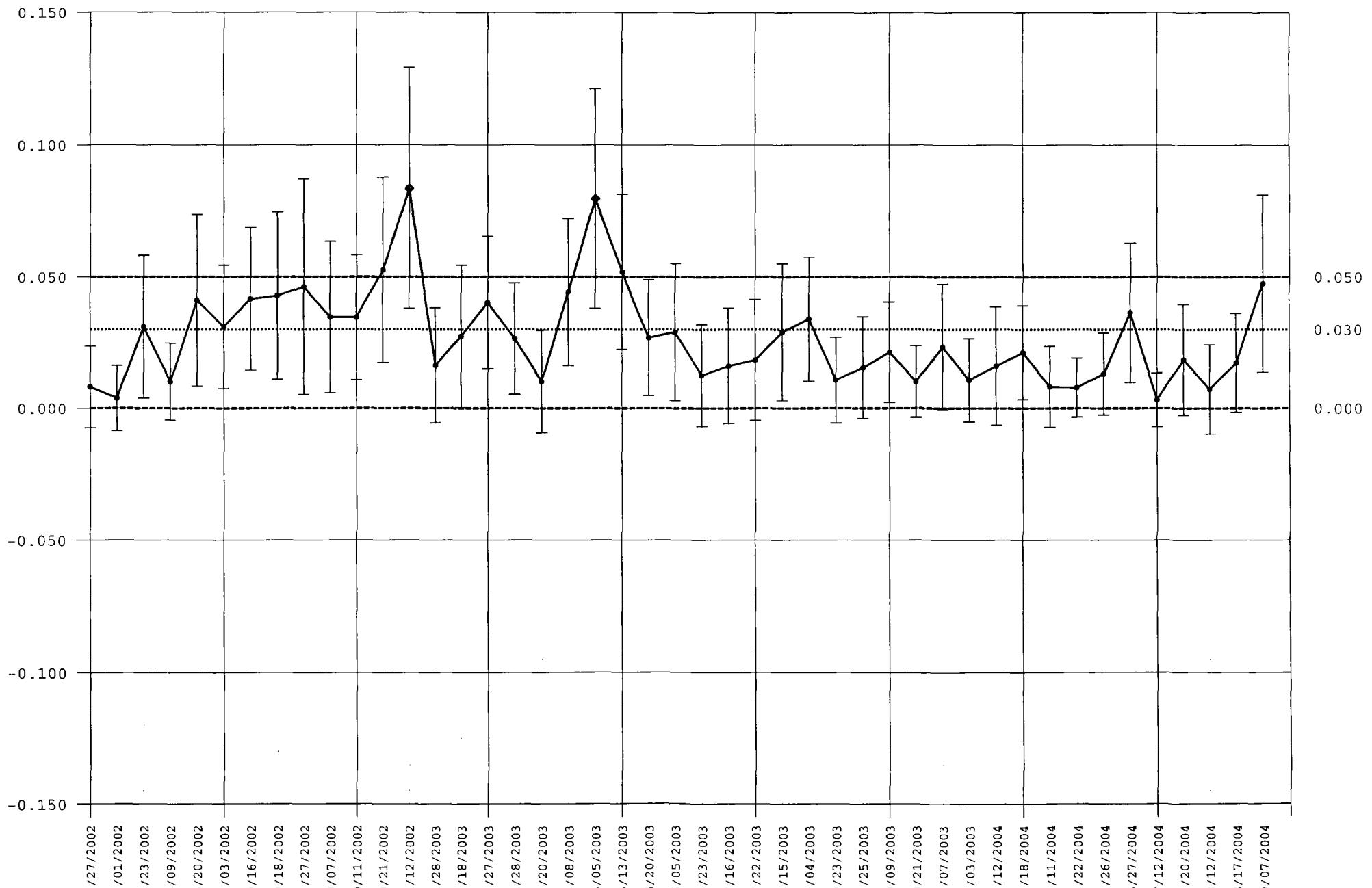


Reagent Blanks

Analyte: U238

Procedure: NAREL U-EICHROM

Analyst: Thaxton, Paula M.



**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES**

REPORT OF SAMPLE DELIVERY GROUP #0400032

Project: LINDSAY LIGHT II
 Analysis Procedure: Actinides (Thorium) by Extraction Chromatography
 Date Reported: 09/29/2004

SAMPLES

NAREL Sample #	Client Sample ID	Type	Matrix	Date Collected	Date Received
A4.02897P	11C#1	SAM	SOIL	04/04/2003	06/10/2004
A4.02898Q	11C#2	SAM	SOIL	04/04/2003	06/10/2004
A4.02899R	11D	SAM	SOIL	04/04/2003	06/10/2004
A4.02900Q	9D/9C NE	SAM	SOIL	04/11/2003	06/10/2004
A4.02901R	9D/9C SE	SAM	SOIL	04/11/2003	06/10/2004
A4.02902T	9D/9C NW	SAM	SOIL	04/11/2003	06/10/2004
A4.02903U	9D/9C SW	SAM	SOIL	04/11/2003	06/10/2004
A4.02904V	10D#2	SAM	SOIL	04/11/2003	06/10/2004
A4.02905W	C-218 (73)	SAM	SOIL	06/20/2003	06/10/2004
A4.02906X	C-201(31)#1	SAM	SOIL	07/08/2003	06/10/2004
A4.02907Y	C-201(31)#2	SAM	SOIL	07/08/2003	06/10/2004
A4.02908Z	12C#1	SAM	SOIL	08/27/2003	06/10/2004
A4.02909A	12C#2	SAM	SOIL	08/27/2003	06/10/2004
A4.02910T	12C#3	SAM	SOIL	08/27/2003	06/10/2004
A4.02911U	C-2-3 CAISSON	SAM	SOIL	11/11/2003	06/10/2004
A4.02912V	13D EAST	SAM	SOIL	11/11/2003	06/10/2004
A4.02913W	13D WEST	SAM	SOIL	11/11/2003	06/10/2004

EXCEPTIONS

1. Packaging and Shipping - No problems were observed.
2. Documentation - No problems were observed.
3. Sample Preparation - No problems were encountered.
4. Analysis - NAREL samples A4.02905 and A4.02906 were recounted due to a mechanical problem with the detectors which caused poor resolution of the spectra. The results of the recounts are reported in this data package.
5. Holding Times - All holding times were met.

QUALITY CONTROL

1. QC samples - All QC analysis results met NAREL acceptance criteria.
2. Yields - All chemical yields were within acceptance limits.
3. Instruments - Response and background checks for all instruments used in these analyses met NAREL acceptance criteria.

CERTIFICATION

I certify that this data report complies with the terms and conditions of the Quality Assurance Project Plan, except as noted above. Release of the data contained in this report has been authorized by the Chief of the Monitoring and Analytical Services Branch and the NAREL Quality Assurance Coordinator, or their designees, as verified by the following signatures.

Mary F. Wisdom 10/7/04
Mary F. Wisdom Date
Quality Assurance Coordinator

John Briggs 10/7/04
John Briggs, Ph.D. Date
Chief, Monitoring and Analytical Services Branch

GENERAL INFORMATION

SAMPLE TYPES

BLD	Blind sample
FBK	Field blank
SAM	Normal sample

ANALYSIS QC TYPES

ANA	Normal analysis
DUP	Laboratory duplicate
LCS	Laboratory control sample (blank spike)
MS	Matrix spike
MSD	Matrix spike duplicate
RBK	Reagent blank

QUALITY INDICATORS

RPD	Relative Percent Difference
%R	Percent Recovery
Z	Number of standard deviations by which a QC measurement differs from the expected value

EVALUATION OF QC ANALYSES

A reagent blank result is considered unacceptable if it is more than 3 standard deviations below zero or more than 3 standard deviations above a predetermined upper control limit. For some analyses NAREL has set the upper control limit at zero. For others the control limit is a small positive number.

NAREL evaluates the results of duplicate and spike analyses using "Z scores." A Z score is the number of standard deviations by which the QC result differs from its ideal value. The score is considered acceptable if its absolute value is not greater than 3.

The Z score for a spiked sample is computed by dividing the difference between the measured value and the target value by the combined standard uncertainty of the difference.

The Z score for a duplicate analysis is computed by dividing the difference between the two measured values by the combined standard uncertainty of the difference. When the precision of paired MS/MSD analyses is evaluated, the native sample activity is subtracted from each measured value and the net concentrations are then converted to total activities before the Z score is computed.

Each standard uncertainty used to compute a Z score includes an additional fixed term to represent sources of measurement error other than counting error. This additional term is not used in the evaluation of reagent blanks.

NAREL reports the "relative percent difference," or RPD, between duplicate results and the "percent recovery," or %R, for spiked analyses, but does not use these values for evaluation.

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400032

ANALYSIS SUMMARY

Analysis Procedure: NAREL TH-EICHROM
 Title: Actinides (Thorium) by Extraction Chromatography

NAREL Sample #	QC Type	Preparation Procedure	Date Completed	Prep Batch #	QC Batch #
A4.02897P		N/A	09/15/2004	0008931X	0003363E
A4.02897P	MS	N/A	09/15/2004	0008931X	0003363E
A4.02897P	MSD	N/A	09/15/2004	0008931X	0003363E
A4.02898Q		N/A	09/15/2004	0008931X	0003363E
A4.02899R		N/A	09/15/2004	0008931X	0003363E
A4.02899R	DUP	N/A	09/15/2004	0008931X	0003363E
A4.02900Q		N/A	09/22/2004	0008959K	0003363E
A4.02901R		N/A	09/22/2004	0008959K	0003363E
A4.02902T		N/A	09/22/2004	0008959K	0003363E
A4.02903U		N/A	09/22/2004	0008959K	0003363E
A4.02904V		N/A	09/22/2004	0008959K	0003363E
A4.02905W		N/A	09/24/2004	0008959K	0003363E
A4.02906X		N/A	09/24/2004	0008959K	0003363E
A4.02907Y		N/A	09/25/2004	0008969M	0003363E
A4.02908Z		N/A	09/25/2004	0008969M	0003363E
A4.02909A		N/A	09/27/2004	0008969M	0003363E
A4.02910T		N/A	09/27/2004	0008969M	0003363E
A4.02911U		N/A	09/27/2004	0008969M	0003363E
A4.02912V		N/A	09/27/2004	0008969M	0003363E
A4.02913W		N/A	09/27/2004	0008969M	0003363E
RBK-00477410K *	RBK	N/A	09/16/2004	0008931X	0003363E

* Samples marked with an asterisk are not in this sample delivery group but were analyzed with it for QC purposes.

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400032

SAMPLE ANALYSIS REPORT

Sample #:	A4.02897P	QC batch #:	0003363E
Matrix:	SOIL	Prep batch #:	0008931X
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.579e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	95.92 %	Analyst:	PMT
Ash/dry weight:	90.00 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/14/2004 17:38	1000.0	AS33	DPG

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2\sigma$ Uncertainty	MDC	Unit	Date
Th227	3.55e-03	4.8e-02	9.9e-02	PCI/GDRY	09/14/2004
Th228	4.21e-01	1.1e-01	6.9e-02	PCI/GDRY	09/14/2004
Th230	5.64e-01	1.3e-01	1.8e-02	PCI/GDRY	09/14/2004
Th232	2.86e-01	9.0e-02	3.6e-02	PCI/GDRY	09/14/2004

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400032**

SAMPLE ANALYSIS REPORT

Sample #:	A4.02897P	QC batch #:	0003363E
Matrix:	SOIL	Prep batch #:	0008931X
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.654e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	95.92 %	Analyst:	PMT
Ash/dry weight:	90.00 %	QC type:	MS

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/14/2004 17:38	1000.0	AS34	DPG

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2\sigma$ Uncertainty	MDC	Unit	Date
Th227	9.22e-03	6.9e-02	1.4e-01	PCI/GDRY	09/14/2004
Th228	4.91e-01	1.4e-01	9.8e-02	PCI/GDRY	09/14/2004
Th230	1.92e+01	2.3e+00	4.7e-02	PCI/GDRY	09/14/2004
Th232	3.39e-01	1.1e-01	2.3e-02	PCI/GDRY	09/14/2004

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400032**

SAMPLE ANALYSIS REPORT

Sample #:	A4.02897P	QC batch #:	0003363E
Matrix:	SOIL	Prep batch #:	0008931X
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.509e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	95.92 %	Analyst:	PMT
Ash/dry weight:	90.00 %	QC type:	MSD

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/14/2004 17:38	1000.0	AS35	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
Th227	5.34e-02	6.8e-02	1.0e-01	PCI/GDRY	09/14/2004
Th228	4.62e-01	1.2e-01	6.5e-02	PCI/GDRY	09/14/2004
Th230	2.06e+01	2.4e+00	1.8e-02	PCI/GDRY	09/14/2004
Th232	3.23e-01	9.6e-02	3.7e-02	PCI/GDRY	09/14/2004

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400032**

SAMPLE ANALYSIS REPORT

Sample #:	A4.02898Q	QC batch #:	0003363E
Matrix:	SOIL	Prep batch #:	0008931X
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.519e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	87.03 %	Analyst:	PMT
Ash/dry weight:	84.40 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/14/2004 17:38	1000.0	AS38	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
Th227	9.01e-02	8.5e-02	1.1e-01	PCI/GDRY	09/14/2004
Th228	1.23e+00	2.4e-01	9.3e-02	PCI/GDRY	09/14/2004
Th230	1.28e+00	2.4e-01	4.4e-02	PCI/GDRY	09/14/2004
Th232	1.12e+00	2.2e-01	3.7e-02	PCI/GDRY	09/14/2004

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400032**

SAMPLE ANALYSIS REPORT

Sample #:	A4.02899R	QC batch #:	0003363E
Matrix:	SOIL	Prep batch #:	0008931X
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.595e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	95.22 %	Analyst:	PMT
Ash/dry weight:	89.60 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/14/2004 17:38	1000.0	AS39	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
Th227	4.90e-02	8.3e-02	1.4e-01	PCI/GDRY	09/14/2004
Th228	9.10e-01	2.1e-01	1.0e-01	PCI/GDRY	09/14/2004
Th230	8.20e-01	1.9e-01	2.5e-02	PCI/GDRY	09/14/2004
Th232	5.76e-01	1.5e-01	5.0e-02	PCI/GDRY	09/14/2004

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400032**

SAMPLE ANALYSIS REPORT

Sample #:	A4.02899R	QC batch #:	0003363E
Matrix:	SOIL	Prep batch #:	0008931X
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.564e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	95.22 %	Analyst:	PMT
Ash/dry weight:	89.60 %	QC type:	DUP

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/14/2004 17:38	1000.0	AS40	DPG

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2\sigma$ Uncertainty	MDC	Unit	Date
Th227	3.22e-02	5.6e-02	9.1e-02	PCI/GDRY	09/14/2004
Th228	7.89e-01	1.7e-01	7.1e-02	PCI/GDRY	09/14/2004
Th230	7.62e-01	1.6e-01	4.1e-02	PCI/GDRY	09/14/2004
Th232	5.93e-01	1.4e-01	1.8e-02	PCI/GDRY	09/14/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400032

SAMPLE ANALYSIS REPORT

Sample #:	A4.02900Q	QC batch #:	0003363E
Matrix:	SOIL	Prep batch #:	0008959K
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.502e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	91.54 %	Analyst:	PMT
Ash/dry weight:	89.20 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/21/2004 16:50	1000.0	AS34	DPG

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2\sigma$ Uncertainty	MDC	Unit	Date
Th227	2.84e-02	5.1e-02	7.5e-02	PCI/GDRY	09/20/2004
Th228	7.65e-01	1.7e-01	8.0e-02	PCI/GDRY	09/20/2004
Th230	8.09e-01	1.7e-01	2.0e-02	PCI/GDRY	09/20/2004
Th232	5.89e-01	1.4e-01	4.9e-02	PCI/GDRY	09/20/2004

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400032**

SAMPLE ANALYSIS REPORT

Sample #:	A4.02901R	QC batch #:	0003363E
Matrix:	SOIL	Prep batch #:	0008959K
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.576e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	90.47 %	Analyst:	PMT
Ash/dry weight:	86.80 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/21/2004 16:50	1000.0	AS35	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
Th227	6.85e-02	6.8e-02	9.1e-02	PCI/GDRY	09/20/2004
Th228	1.05e+00	1.9e-01	5.9e-02	PCI/GDRY	09/20/2004
Th230	9.37e-01	1.8e-01	3.8e-02	PCI/GDRY	09/20/2004
Th232	9.56e-01	1.8e-01	2.9e-02	PCI/GDRY	09/20/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400032

SAMPLE ANALYSIS REPORT

Sample #:	A4.02902T	QC batch #:	0003363E
Matrix:	SOIL	Prep batch #:	0008959K
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.526e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	93.55 %	Analyst:	PMT
Ash/dry weight:	84.80 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/21/2004 16:50	1000.0	AS38	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
Th227	2.02e-02	5.4e-02	9.8e-02	PCI/GDRY	09/20/2004
Th228	7.83e-01	1.6e-01	6.2e-02	PCI/GDRY	09/20/2004
Th230	9.61e-01	1.8e-01	1.6e-02	PCI/GDRY	09/20/2004
Th232	7.82e-01	1.6e-01	4.3e-02	PCI/GDRY	09/20/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400032

SAMPLE ANALYSIS REPORT

Sample #:	A4.02903U	QC batch #:	0003363E
Matrix:	SOIL	Prep batch #:	0008959K
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.506e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	88.83 %	Analyst:	PMT
Ash/dry weight:	86.00 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/21/2004 16:50	1000.0	AS39	DPG

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2\sigma$ Uncertainty	MDC	Unit	Date
Th227	7.68e-02	7.7e-02	1.0e-01	PCI/GDRY	09/20/2004
Th228	9.49e-01	1.9e-01	5.5e-02	PCI/GDRY	09/20/2004
Th230	1.10e+00	2.1e-01	3.8e-02	PCI/GDRY	09/20/2004
Th232	9.53e-01	1.9e-01	3.2e-02	PCI/GDRY	09/20/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400032

SAMPLE ANALYSIS REPORT

Sample #:	A4.02904V	QC batch #:	0003363E
Matrix:	SOIL	Prep batch #:	0008959K
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.631e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	94.81 %	Analyst:	PMT
Ash/dry weight:	92.00 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/21/2004 16:50	1000.0	AS40	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
Th227	4.86e-02	5.2e-02	5.4e-02	PCI/GDRY	09/20/2004
Th228	6.21e-01	1.4e-01	7.1e-02	PCI/GDRY	09/20/2004
Th230	6.23e-01	1.4e-01	3.8e-02	PCI/GDRY	09/20/2004
Th232	6.24e-01	1.4e-01	3.4e-02	PCI/GDRY	09/20/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400032

SAMPLE ANALYSIS REPORT

Sample #:	A4.02905W	QC batch #:	0003363E
Matrix:	SOIL	Prep batch #:	0008959K
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.546e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	97.07 %	Analyst:	PMT
Ash/dry weight:	90.00 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/23/2004 17:24	1000.0	AS34	DPG

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2\sigma$ Uncertainty	MDC	Unit	Date
Th227	1.18e-01	8.7e-02	7.8e-02	PCI/GDRY	09/20/2004
Th228	6.35e-01	1.5e-01	7.7e-02	PCI/GDRY	09/20/2004
Th230	5.56e-01	1.3e-01	1.9e-02	PCI/GDRY	09/20/2004
Th232	4.01e-01	1.1e-01	4.7e-02	PCI/GDRY	09/20/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400032

SAMPLE ANALYSIS REPORT

Sample #:	A4.02906X	QC batch #:	0003363E
Matrix:	SOIL	Prep batch #:	0008959K
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.509e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	89.37 %	Analyst:	PMT
Ash/dry weight:	87.60 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/23/2004 17:24	1000.0	AS35	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
Th227	3.32e-01	1.4e-01	9.9e-02	PCI/GDRY	09/20/2004
Th228	1.76e+00	2.8e-01	6.0e-02	PCI/GDRY	09/20/2004
Th230	1.10e+00	2.0e-01	3.8e-02	PCI/GDRY	09/20/2004
Th232	1.74e+00	2.8e-01	2.9e-02	PCI/GDRY	09/20/2004

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400032**

SAMPLE ANALYSIS REPORT

Sample #:	A4.02907Y	QC batch #:	0003363E
Matrix:	SOIL	Prep batch #:	0008969M
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.515e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	89.72 %	Analyst:	PMT
Ash/dry weight:	88.00 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/24/2004 16:54	1000.0	AS39	DPG

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2\sigma$ Uncertainty	MDC	Unit	Date
Th227	4.82e-02	6.2e-02	9.1e-02	PCI/GDRY	09/24/2004
Th228	7.71e-01	1.6e-01	5.1e-02	PCI/GDRY	09/24/2004
Th230	8.62e-01	1.7e-01	3.5e-02	PCI/GDRY	09/24/2004
Th232	6.72e-01	1.5e-01	3.0e-02	PCI/GDRY	09/24/2004

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400032**

SAMPLE ANALYSIS REPORT

Sample #:	A4.02908Z	QC batch #:	0003363E
Matrix:	SOIL	Prep batch #:	0008969M
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.526e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	82.13 %	Analyst:	PMT
Ash/dry weight:	85.60 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/24/2004 16:54	1000.0	AS40	DPG

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2\sigma$ Uncertainty	MDC	Unit	Date
Th227	7.97e-02	6.4e-02	5.4e-02	PCI/GDRY	09/24/2004
Th228	1.03e+00	2.0e-01	7.4e-02	PCI/GDRY	09/24/2004
Th230	1.21e+00	2.2e-01	4.0e-02	PCI/GDRY	09/24/2004
Th232	1.01e+00	1.9e-01	3.6e-02	PCI/GDRY	09/24/2004

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400032**

SAMPLE ANALYSIS REPORT

Sample #:	A4.02909A	QC batch #:	0003363E
Matrix:	SOIL	Prep batch #:	0008969M
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.611e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	84.52 %	Analyst:	PMT
Ash/dry weight:	87.60 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/26/2004 16:39	1000.0	AS34	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
Th227	1.53e-01	1.1e-01	9.1e-02	PCI/GDRY	09/24/2004
Th228	9.78e-01	2.1e-01	9.3e-02	PCI/GDRY	09/24/2004
Th230	1.68e+00	2.9e-01	2.3e-02	PCI/GDRY	09/24/2004
Th232	1.11e+00	2.2e-01	5.7e-02	PCI/GDRY	09/24/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400032

SAMPLE ANALYSIS REPORT

Sample #:	A4.02910T	QC batch #:	0003363E
Matrix:	SOIL	Prep batch #:	0008969M
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.518e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	92.44 %	Analyst:	PMT
Ash/dry weight:	82.00 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/26/2004 16:39	1000.0	AS35	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
Th227	1.54e-01	9.8e-02	1.0e-01	PCI/GDRY	09/24/2004
Th228	7.69e-01	1.6e-01	6.3e-02	PCI/GDRY	09/24/2004
Th230	1.65e+00	2.7e-01	4.0e-02	PCI/GDRY	09/24/2004
Th232	6.07e-01	1.4e-01	3.1e-02	PCI/GDRY	09/24/2004

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400032**

SAMPLE ANALYSIS REPORT

Sample #:	A4.02911U	QC batch #:	0003363E
Matrix:	SOIL	Prep batch #:	0008969M
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.574e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	88.62 %	Analyst:	PMT
Ash/dry weight:	90.40 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/26/2004 16:39	1000.0	AS38	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
Th227	7.64e-02	8.6e-02	1.2e-01	PCI/GDRY	09/24/2004
Th228	5.32e-01	1.4e-01	7.5e-02	PCI/GDRY	09/24/2004
Th230	8.21e-01	1.7e-01	2.0e-02	PCI/GDRY	09/24/2004
Th232	4.78e-01	1.3e-01	5.3e-02	PCI/GDRY	09/24/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400032

SAMPLE ANALYSIS REPORT

Sample #:	A4.02912V	QC batch #:	0003363E
Matrix:	SOIL	Prep batch #:	0008969M
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.572e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	87.86 %	Analyst:	PMT
Ash/dry weight:	89.20 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/26/2004 16:39	1000.0	AS39	DPG

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2\sigma$ Uncertainty	MDC	Unit	Date
Th227	1.35e-01	9.0e-02	9.4e-02	PCI/GDRY	09/24/2004
Th228	9.41e-01	1.8e-01	4.9e-02	PCI/GDRY	09/24/2004
Th230	7.94e-01	1.6e-01	3.4e-02	PCI/GDRY	09/24/2004
Th232	7.94e-01	1.6e-01	2.9e-02	PCI/GDRY	09/24/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400032

SAMPLE ANALYSIS REPORT

Sample #:	A4.02913W	QC batch #:	0003363E
Matrix:	SOIL	Prep batch #:	0008969M
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.515e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	84.33 %	Analyst:	PMT
Ash/dry weight:	89.20 %	QC type:	ANA

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/26/2004 16:39	1000.0	AS40	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
Th227	1.36e-01	9.1e-02	6.7e-02	PCI/GDRY	09/24/2004
Th228	1.17e+00	2.2e-01	8.4e-02	PCI/GDRY	09/24/2004
Th230	1.28e+00	2.3e-01	4.5e-02	PCI/GDRY	09/24/2004
Th232	8.35e-01	1.8e-01	4.1e-02	PCI/GDRY	09/24/2004

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400032**

SAMPLE ANALYSIS REPORT

QC Sample #: RBK-00477410K

QC batch #: 0003363E

Prep batch #: 0008931X

Prep procedure: N/A

Analysis procedure: NAREL TH-EICHROM

Analyst: PMT

QC type: RBK

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
09/15/2004 12:12	1000.0	AS33	DPG

ANALYTICAL RESULTS

Analyte	Activity	± 2σ Uncertainty	MDC	Unit	Date
Th227	9.94e-04	1.3e-02	2.7e-02	PCI	09/14/2004
Th228	4.20e-02	1.9e-02	1.9e-02	PCI	09/14/2004
Th230	3.23e-02	1.5e-02	4.8e-03	PCI	09/14/2004
Th232	6.99e-03	8.1e-03	9.8e-03	PCI	09/14/2004

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
TH ANALYSES
SDG #0400032

QC BATCH SUMMARY

QC batch #: 0003363E
 Preparation procedure: N/A
 Analysis procedure: NAREL TH-EICHROM

NAREL Sample #	QC Type	Yield (%)	± 2σ Uncertainty (%)	Analyst
A4.02897P		93.13 %	2.56 %	PMT
A4.02897P	MS	72.69 %	2.09 %	PMT
A4.02897P	MSD	92.18 %	2.50 %	PMT
A4.02898Q		74.92 %	2.14 %	PMT
A4.02899R		65.30 %	1.92 %	PMT
A4.02899R	DUP	92.71 %	2.55 %	PMT
A4.02900Q		89.72 %	2.61 %	PMT
A4.02901R		93.06 %	2.66 %	PMT
A4.02902T		98.70 %	2.83 %	PMT
A4.02903U		85.67 %	2.49 %	PMT
A4.02904V		99.11 %	2.84 %	PMT
A4.02905W		92.63 %	2.68 %	PMT
A4.02906X		95.49 %	2.76 %	PMT
A4.02907Y		94.03 %	2.90 %	PMT
A4.02908Z		92.66 %	2.83 %	PMT
A4.02909A		72.34 %	2.35 %	PMT
A4.02910T		84.99 %	2.64 %	PMT
A4.02911U		85.18 %	2.65 %	PMT
A4.02912V		97.12 %	2.98 %	PMT
A4.02913W		85.18 %	2.65 %	PMT
RBK-00477410K *	RBK	97.99 %	2.62 %	PMT

* Samples marked with an asterisk are not in this sample delivery group but were analyzed with it for QC purposes.

National Air and Radiation Environmental Laboratory
QC Batch Report

QC Batch #: 0003363E

Analytical Procedure: NAREL TH-EICHROM

REAGENT BLANKS (PCI)

Sample ID	Nuclide	Activity $\pm 2\sigma$	Prep Date
00477410K	TH227	9.94e-04 \pm 1.3e-02	2004-09-14
00477410K	TH228	4.20e-02 \pm 1.9e-02	2004-09-14
00477410K	TH230	3.23e-02 \pm 1.5e-02	2004-09-14
00477410K	TH232	6.99e-03 \pm 8.1e-03	2004-09-14

LABORATORY DUPLICATES (PCI/GASH)

Sample ID	Nuclide	Original $\pm 2\sigma$	Duplicate $\pm 2\sigma$	RPD	Z
A4.02899R	TH227	5.47e-02 \pm 9.3e-02	3.60e-02 \pm 6.3e-02	41.24	-0.33 OK
A4.02899R	TH228	1.02e+00 \pm 2.3e-01	8.80e-01 \pm 1.9e-01	14.21	-0.83 OK
A4.02899R	TH230	9.15e-01 \pm 2.1e-01	8.50e-01 \pm 1.8e-01	7.40	-0.43 OK
A4.02899R	TH232	6.43e-01 \pm 1.7e-01	6.62e-01 \pm 1.5e-01	2.88	0.15 OK

MATRIX SPIKES (PCI/GASH)

Sample ID	Nuclide	Amt Added $\pm 2\sigma$	Native $\pm 2\sigma$	Measured $\pm 2\sigma$	%R	Z
A4.02897P	TH227	NO SPIKE DATA				
A4.02897P	TH228	NO SPIKE DATA				
A4.02897P	TH230	2.45e+01 \pm 2.2%	6.27e-01 \pm 1.5e-01	2.14e+01 \pm 2.5e+00	84.54	-2.27 OK
A4.02897P	TH232	NO SPIKE DATA				

MATRIX SPIKE DUPLICATES (PCI/GASH)

Sample ID	Nuclide	Amt Added $\pm 2\sigma$	Measured $\pm 2\sigma$	RPD	Z	%R	Z
A4.02897P	TH227	NO SPIKE DATA					
A4.02897P	TH228	NO SPIKE DATA					
A4.02897P	TH230	2.60e+01 \pm 2.2%	2.28e+01 \pm 2.6e+00	1.22	0.11 OK	85.58	-2.13 OK
A4.02897P	TH232	NO SPIKE DATA					

Analyst:

Paula Thaxton
 Thaxton, Paula M.

9/27/04

QA Officer:

Linda J. McLean

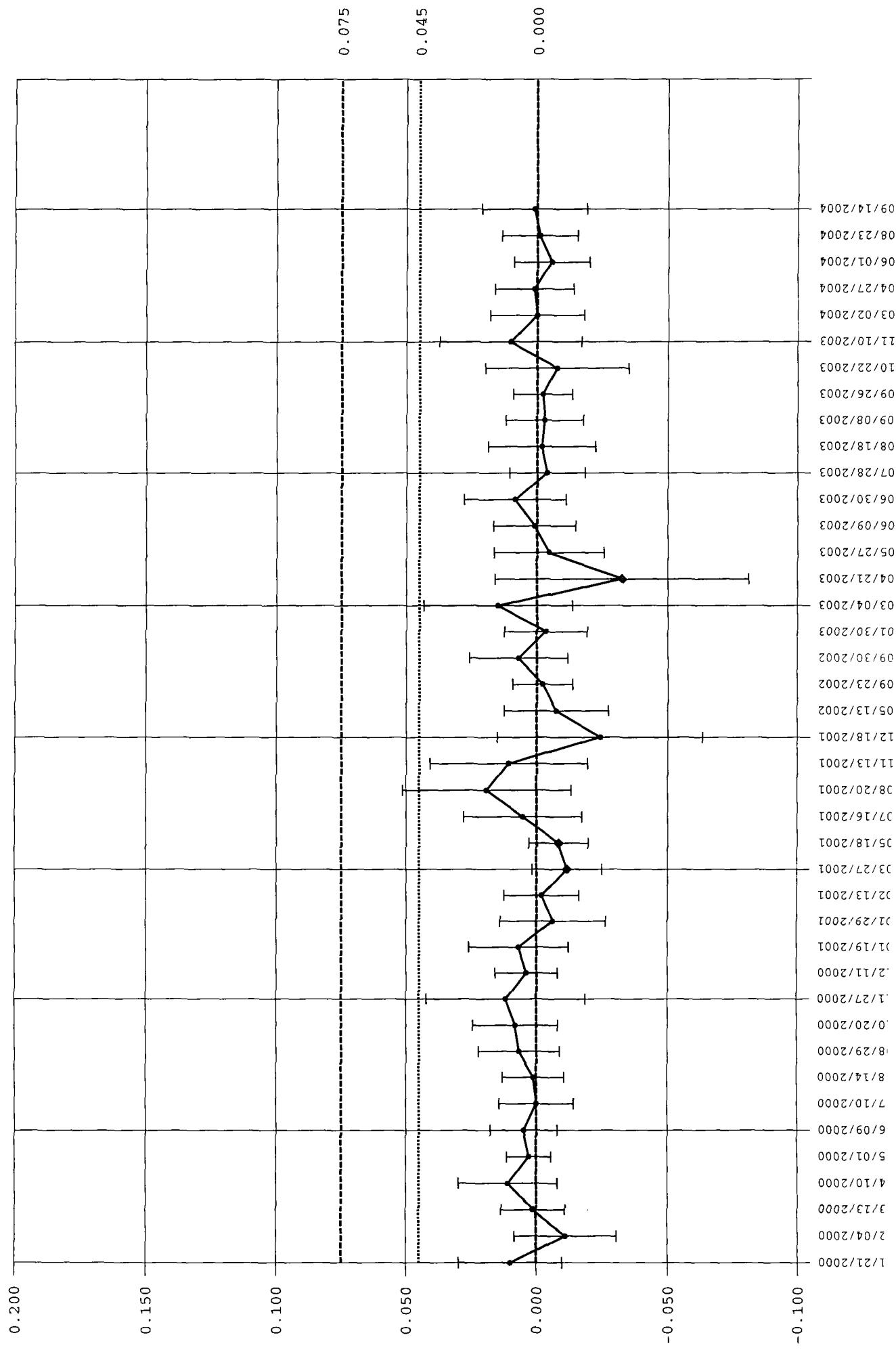
9/27/04

Reagent Blanks

Analyte: TH227

Procedure: NAREL TH-EICHROM

Analyst: Thaxton, Paula M.

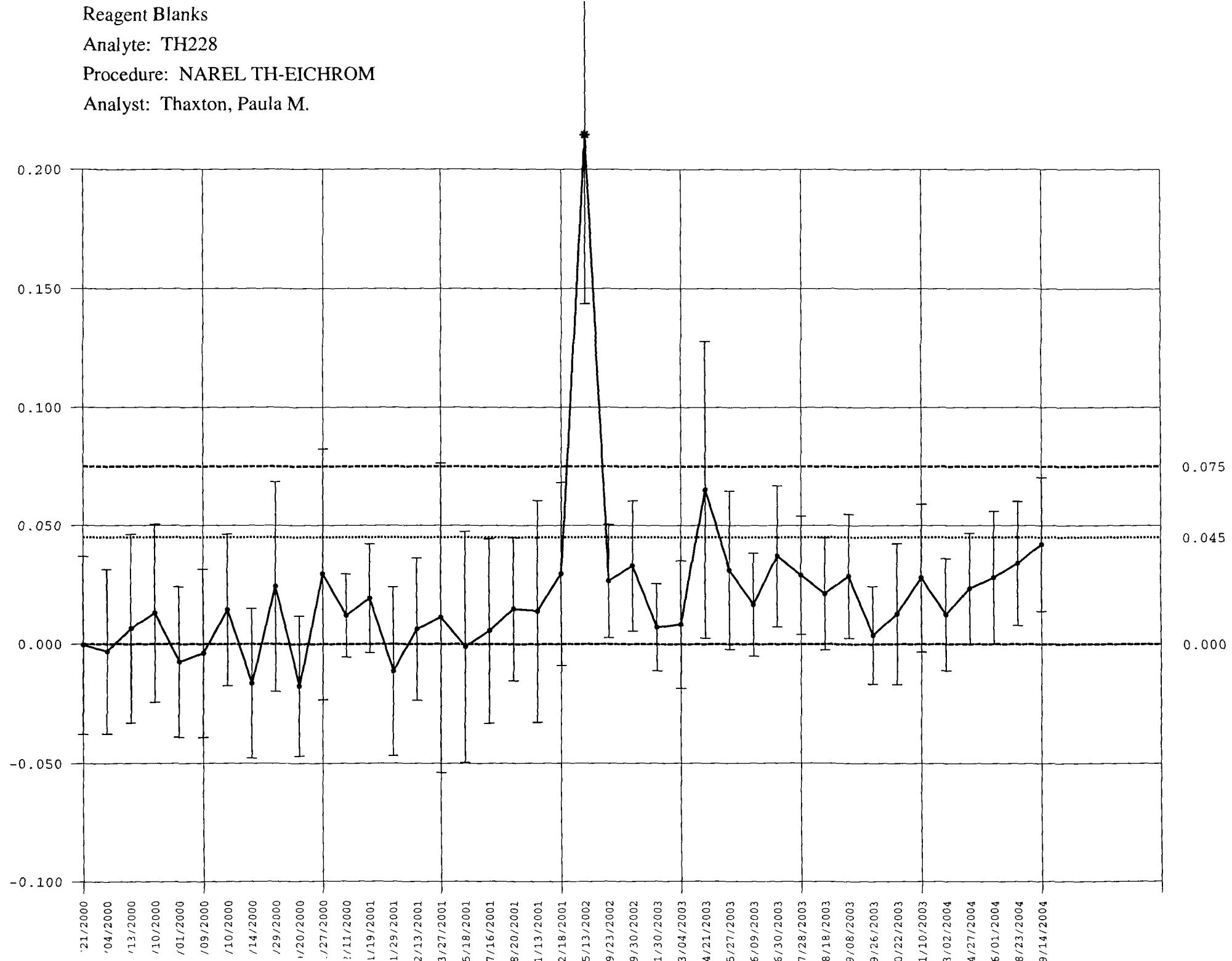


Reagent Blanks

Analyte: TH228

Procedure: NAREL TH-EICHROM

Analyst: Thaxton, Paula M.

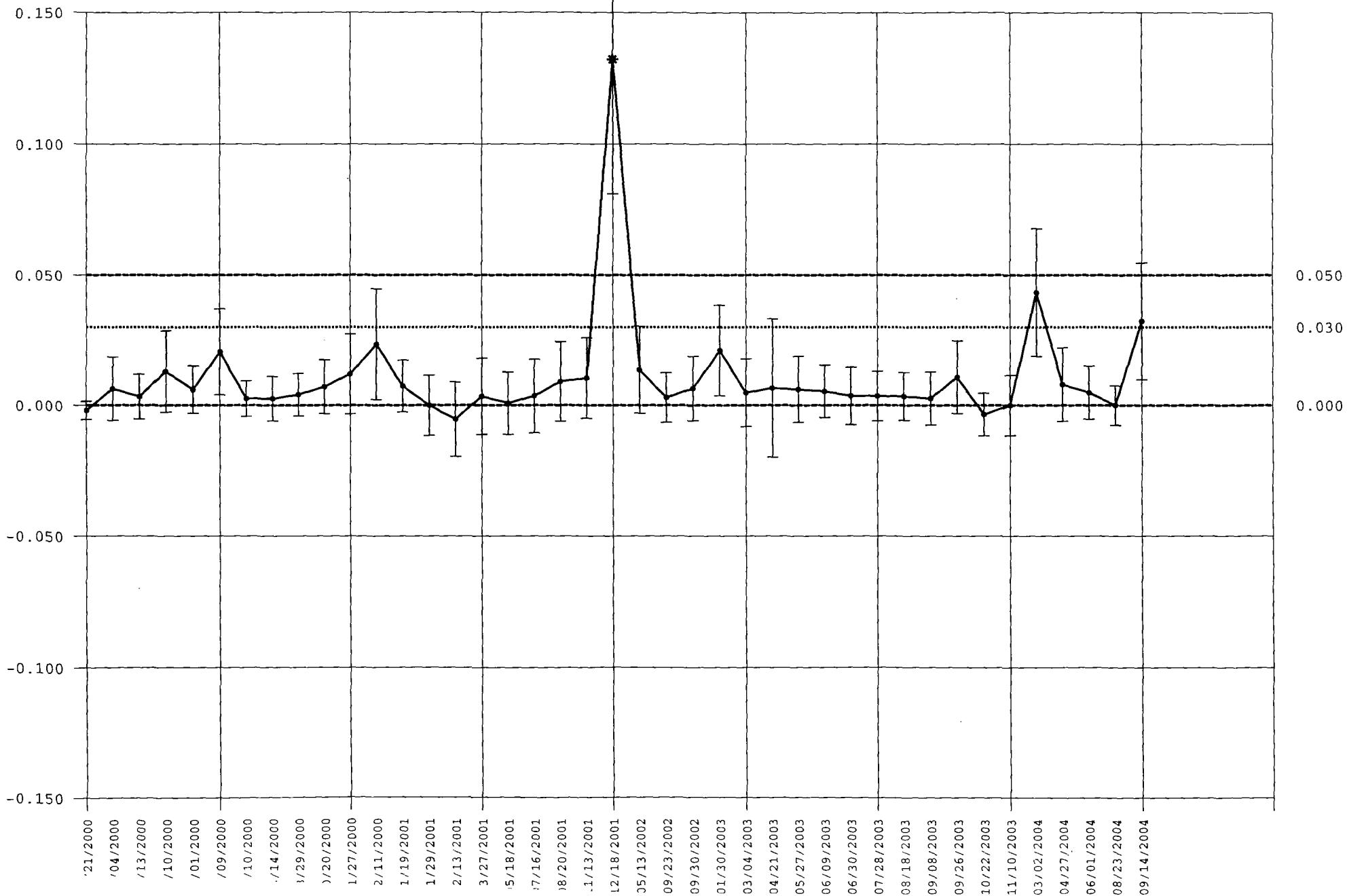


Reagent Blanks

Analyte: TH230

Procedure: NAREL TH-EICHROM

Analyst: Thaxton, Paula M.



Reagent Blanks

Analyte: TH232

Procedure: NAREL TH-EICHROM

Analyst: Thaxton, Paula M.

